THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION, INC.

Published for the Collector, Historian and Old Time Wireless Operator

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Lee deForest visits W6YPM (see p. 4).

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"The Old Timer's Bulletin" — The AWA Journal

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Please write legibly. Enclosing an SASE speeds replies.

Dues and address changes: Joyce Peckham (Secretary), Box E, Breesport, NY 14816, (607) 739-5443; FAX: (607) 796-6230. Dues: 1 Year, $15; 2 Years, $27; overseas (airmail), $18. Make checks payable to "AWA."

AWA official business: William B. Fizette, (President), RR 1, Box 55, Henryville, PA 18332, (717) 629-0637.

OTB Submissions: Marc Ellis, Editor, *OTB,* PO Box 1306, Evanston, IL 60204-1306, (847) 869-5016.

Orders for the *AWA Review* or back issues of *OTB:* Debbie Roloson, 2 Walnut Place, Apalachin, NY 13732, (607) 625-3031.

Want ads and coordination of slide/video shows: Richard Ransley, PO Box 41, Sodus, NY 14551, (315) 483-9307.

Museum operation: Bruce Kelley (Curator), 59 Main St., Bloomfield, NY 14469, (716) 657-7489.

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THE PRESIDENT'S MESSAGE

By now we are well into 1997, and the summer season of radio flea markets and AWA meetings will be upon us shortly. Time flies!

Perhaps the most important piece of news that I wish to report is that the AWA Museum has purchased the two-acre plot of land where the Museum Annex is located in Bloomfield, NY. This site is approximately one mile from the main Museum, and in addition to being a storage facility for the overflow from our constantly growing collections, is being used in part as a second museum. I refer, of course, to the new addition on which we have been concentrating during the past year and a half.

The cash demands to pay for both the addition and the plot of land have been considerable, and it is for that reason we initiated the second AWA Museum fund drive last year. So far over 225 members have donated to the fund, and at present the total giving is in the $26,000 range. Our sincere thanks to all who have helped, but it is obvious that we need to maintain our momentum.

Please take a look at what you might be able to do for your organization. If you can't find your way clear to donate a tax-deductible cash gift, consider donating equipment, giving us the option to either sell it or add it to the Museum collection. One member did just that recently, donating several pieces of used amateur gear in excellent condition, telling us to use it as we saw fit. As we did in this case, we can probably make arrangements to pick it up. And remember that matching funds are available from many of our large corporations. Dexter Deeley can provide you with details.

I should mention the 1BCG exercise which took place during December. Thanks to the monumental efforts of several of our members, the seventy-fifth anniversary reenactment of the first trans-Atlantic short-wave wireless message in December, 1921 was successfully completed, with considerable interest and participation from hundreds of radio amateurs on both sides of the Atlantic. The site was the same as that used originally, and the transmitter was a replica built by AWA member Bob Raide, W2ZM. The lead operator, Tim Walker, N2GIG, was instrumental in the station set up, the publicity and the interface with the ARRL. The efforts of all who participated are appreciated very much indeed. There is a more detailed report in this issue.

You'll notice a new member application blank inserted in the pages of this issue. Please pass it along to an interested friend!

Finally, for those sharp eyed radio amateurs among our ranks, you will note that my station call has been changed to W2DGB, the call I was originally issued when I became a "real" amateur, before I started moving around and picking up other calls as I went. I guess the feeling can be described as one of coming home at last.

— Bill Fizette, W2DGB

COVER PHOTO

This photo of Dr. Lee deForest, taken shortly before his death, may be the last shot ever made of the inventor. The occasion was a visit to the radio room of Erv Rasmussen (W6YPM). The photo was given to Hank Olson, W6GXN, who in turn gave it to the AWA. During a taped interview, "Doc" once said that he had an interest in amateur radio, but could never build up his code speed! (Photo and information courtesy Bruce Kelley)

— WANTED —

Editorial Associate (Volunteer Position)

Chicago-area AWA member needed to assist *OTB* Editor with author correspondence, proofreading and various administrative duties. If you have some time to spare and would like to get involved in the *OTB* operation, contact Marc Ellis, PO Box 1306, Evanston, IL 60204-1306. Phone (847) 869-5016.

FROM THE EDITOR

You may notice a few new touches in this issue of the *OTB*. The reason: we have a new designer. Claudia Gray, who is Design Director for a trade magazine based in the Chicago area, brings over seven years of experience in publications design and related graphic arts to her new post with the AWA. Claudia and I will be working together to give the *OTB* a cleaner, more readable format without (I hasten to add) changing its basic character.

It would be appropriate here to give our previous designer, Al Green, a hearty "thank-you" for making it possible for us to collaborate smoothly and efficiently though separated by a distance of about 1000 miles. Al and I did four issues together. Through the use of e-mail, voicemail and fax — facilitated by his computer ingenuity and unfailing humor, we were able to communicate almost as if we were in the same room.

However now your Editor and Designer *will* actually be able to meet in the same room, when necessary, which is something that will both make the Editor's job easier and result in a graphically improved *OTB*. The sharp-eyed among you will notice that the *OTB* pages now have footers identifying our publication and the date of issue. We've also added a "bug," in the form of a tiny AWA logo, to indicate the conclusion of each article. As a start towards giving the *OTB* a cleaner look, author's addresses have been removed from the feature article headings and consolidated in a directory elsewhere in the book. Look for more innovations in the issues to come.

Our experiment last month with using Times Semibold type for improved readability drew only a few comments — four to be exact. Two readers were extremely enthusiastic, one was luke-warm, and one felt that the experimental type was actually *harder* to read. My own assessment? I think the semibold type is easier to read in small doses, but is tiring to the eye over the long haul.

So we've tabled the type experiment temporarily. The transition from Al Green's PC/Pagemaker system to Claudia's Mac/Quark Xpress system is a difficult enough project on its own, and we've decided to see what the standard type looks like now that the switch has been made. However, we have increased the type size and leading by half a point throughout the issue.

Bear with us for any glitches you may find in *OTB*'s "maiden voyage" and know that we working constantly to bring you a publication that we can all be proud of!

— Marc Ellis N9EWJ

CHRISTIE'S TO AUCTION MARCONI ARCHIVES

SPECIAL TO THE OTB

Christie's of South Kensington has just announced the sale, to be held on April 24 and 25, 1997, of the remarkable and little-known archives of the Marconi company. The collection includes an important cross-section of early equipment and experiments as well as important technical, business and personal papers.

Among the highlights of the sale are some of the earliest wireless messages; Marconi's 1901 diary recording the first signal across the Atlantic; the actual earphone in which the inventor heard this signal; an intercepted 1914 German army message informing their forces of the declaration of war a day and a half prior to the official declaration; and the microphone used by Dame Nellie Melba in one of the first broadcasts of voice and music (1920).

Other items of profound interest to radio historians include the first commercial wireless telegram, sent by Lord Kelvin to the University of Glasgow; a confidential 1904 letter from Dr. Ambrose Fleming to Marconi announcing the invention of the "valve"; and a wealth of wireless messages and logs sent during the sinking of the *Titanic*.

The two-day sale is expected to raise in excess of a million pounds. Proceeds will be used to fund "Marconi Days," an educational initiative to train teachers of electronics. Marconi Days, sponsored by GEC Marconi, will be directed by the Institute of Electrical Engineers (IEE).

Highlights from the collection will be exhibited in the United States and Italy prior to the sale.

For more information, contact Christie's, 85 Old Brompton Rd., London SW7 3LD. Tel. (0171) 321 3120; Fax (0171) 581 3679; web site with sale information, http:/www.christies.com/marconi; e-mail, marconi@christies.com.

AWA NEWS

OTB Policy on Promoting Events

The OTB is pleased to list the meets and meetings of any established antique radio organization, whether or not it is associated with the AWA. Do not send your information directly to the *OTB* Editor. Please send it to Joyce Peckham, Box E, Breesport, NY 14816. Closing date is six weeks prior to first day of month of issue.

CALENDAR OF AWA ACTIVITIES

Feb. 26-27,
Mar. 1-2.....Regular OT Contest (20-160m.)
Mar. 15 .....AWA Florida Meet
Mar. 21-22.....AWA Spring meet in the Carolinas
May 2-3 .....IHRS/AWA Regional Spring Meet
May 10 .....AWA Northern NJ Spring Meet
May 17 .....AWA Bloomfield, NY Spring Meet
June 14 .....AWA Carolina Chapter Swap Meet
Sept. 3-6.....Annual Conference, "Television", see p. 7
Nov. 2 — Annual Business Meeting
(see below for detailed information on meets)

CALENDAR OF MEETS

(AWA logo identifies AWA-sponsored events)

DVHRC PENNSYLVANIA MEET
February 15

Delaware Valley Historic Radio Club presents an indoor swap meet/auction at Grimes Center, St. Denis Church, Havertown, PA. Just west of Philadelphia, site has easy access from PA Turnpike, I-476, or I-95: use Exit 4 from the I-476 "Blue route" onto Rte. 3 towards Upper Darby. Make first left onto Lawrence Rd., after one light go left onto Eagle Rd, then turn right after three lights onto St. Denis. Auction is planned for estate material and bring-ins. Big meeting hall (5,000 sq. ft.) with easy ground-floor unloading from generous parking lot. Food on premises. Rates: $2 for buyers; $15 per table in advance for sellers. $20 on the day of the event. Extra tables $3 less. Reservations advised. Send check payable to DVHRC to 1649 Yellow Springs Rd., Chester Springs, PA 19425 by Feb. 10. Contact: Dave Abramson, (610) 827-9757.

AWA FLORIDA SPRING MEET
March 15

Stewart Elementary School, 7905 15th Ave. NW, Bradenton, FL 34209. For info: Norm Smith (941) 792-0003.

AWA SPRING MEET IN THE CAROLINAS
March 21-22

The Carolinas Chapter of the Antique Wireless Association presents the 21st annual "Spring meet in the Carolinas." Sheraton Airport Plaza Hotel. I-85 Exit 33, Billy Graham Parkway, Phone 1-800-325-3535. Giant 2-day flea market; Friday afternoon restoration forum; Friday evening equipment auction; Saturday morning ladies program; equipment contest; Saturday afternoon Chapter meeting and programs. No buying, selling, trading or displaying of equipment before 8 AM Friday. Info: write CC-AWA, PO Box 3015, Matthews, NC 28106 or call Ron Lawrence, Meet Chairman, (704) 289-1166.

IHRS/AWA REGIONAL SPRING MEET
May 2-3

Indiana Historical Radio Society Spring Meet at Signature Inn East, Indianapolis, IN – (317) 353-6966. Setup, Thursday evening, May 1. Banquet Friday evening. Guests from other clubs cordially invited. Contact Ross Smith, 1133 Strong Ave, Elkhart, IN 46514.

AWA NORTHERN NJ SPRING MEET
May 10

Schooley's Mountain. Good flea market. Dinner available. Info: Lauren Peckham (607) 739-5443.

AWA BLOOMFIELD, NY SPRING MEET
May 17

Auction of surplus items from Annex, flea mar-

ket, dinner. Info: Bruce Kelley (716) 657-7489 or Lauren Peckham (607) 739-5443.

ROCHESTER HAMFEST
May 30-June 1

Monroe County Fairgrounds, Rochester, NY. Look for the AWA Booth on Saturday.

MAARC "RADIOACTIVITY 97"
June 12-14

Mid-Atlantic Antique Radio Club presents the fourth annual "Radioactivity" event at the Best Western Maryland Inn in Laurel Maryland (conveniently located between Baltimore and Washington) starting Thursday evening June 12 and extending through Saturday June 14th. There will be a giant trader's mart with refreshments available for participants, numerous workshops, presentations and guest speakers. Other events include an old equipment contest, awards and activities for the entire family. Hotel phone is (301) 776-5300 (mention MAARC for a special room rate). Contact Steve Snyderman, (703) 978-3086 for additional details.

AWA CAROLINAS CHAPTER SWAP MEET
June 14

At the North Carolina Transportation Museum in Spencer, NC. This is a restored locomative repair facility with functional roundhouse, operational steam locomotives an d a fine collection of antique cars. Picnic shelter nearby. Info: call Ron Lawrence, (704) 289-1166.

36TH ANNUAL CONFERENCE
September 3-6, 1997
Special Theme "Television"

Here's a great idea for fighting those mid-winter blues. Start making your travel plans for our 36th Conference! As usual, the conference will be held at the Thruway Marriott in Rochester (Henrietta), NY. Program information will be announced in upcoming OTBs, and registration forms will be included with the August issue.

For Marriott information or reservations, call (716) 389-8300. Other convenient locations are: Day's Inn (716) 334-9300; Red Roof Inn (716) 359-1100; Microtel (716) 334-3400; Highlander Inn (716) 334-4280; Super 8 Motel (716) 359-1630; Dorkat Motel (716) 334-7000.

RECURRING MEETINGS

• **California Historical Radio Society** — Quarterly swap meets at Foothill College, Los Altos Hills, CA; May 4, Aug 3, Nov 2. Exit Magdelena off 280 freeway. The upper parking lot "T" gates open at 8 a.m. Regional events: May 18 (San Luis Obispo); July 6 (San Francisco); Sept 14 (picnic/meet-near Rio Vista); Oct 5 (Redding). General address is CHRS, PO Box 31659, San Francisco, CA 94131. 24-hour voicemail info: (415) 978-9100.

• **Carolinas Chapter of the AWA** — Meets approximately bimonthly. For more information, Contact Ron Lawrence, President, PO Box 3015, Matthews, NC 28106-3015; phone (704) 289-1166.

• **Delaware Valley Historic Radio Club** — This SE Pennsylvania club meets the second Tuesday of each month at North Penn Amusements, 105 Main St. (Rt. 113), Souderton. Membership $10/yr. For info: PO Box 41031, Philadelphia, PA 19127-0031, or Mike Koste (215) 646-6488.

• **Houston Vintage Radio Association** — Meets 2nd Tues. each month (except Jan. and Dec.) At Lai Lai Restaurant, Tides II Motel, Houston Medical Center, Main and Holcombe Sts., Houston, TX. Meetings include auction/program, 7-10 p.m. Assoc. publishes Grid Leak quarterly, monthly activity announcements. Membership $15/yr. Write: HVRA, PO Box 31276, Houston, TX 77231-1276, or call Richard Collins, (713) 778-0721.

• **Hudson Valley Antique Radio & Phono Society** — Meets 3rd Thurs. of month, 7 p.m. Meeting, swapmeet, and membership info: HARPS, PO Box 207, Campbell Hall, NY 10916, or call John or Linda Gramm at (914) 427-2602.

• **London Vintage Radio Club** — This Ontario, Canada club meets on the last Saturday of January, March, May, June and November. (But for 1996 only, the November meeting will be on the 23rd). Annual September meet with the Toronto club. Contact: Lloyd Swackhammer, VE3IIA, RR 2, Alma, Ontario Canada. (519) 638-2827.

• **Mid-Atlantic Antique Radio Club** — Meets monthly, usually at New Hope Seventh Day Adventist Church, Burtonsville, MD, Saturdays or Sundays, depending on time of year. Contacts: President Sam Cannan (410) 255-7728, or Membership Chairperson Jay Kiessling (410) 239-1818.

• **New Jersey Antique Radio Club** — Meets 2nd Fri. each month, 7:30 p.m. Holds three

annual swap meets. Contact (send SASE): Tony Flanagan, 92 Joysan Terr., Freehold, NJ 07728, (908) 462-6638.

• **Oklahoma Vintage Radio Collectors** — Meets 2nd Sat. each month, Spencer_s Barbecue Restaurant, NW 63rd and May Ave., Oklahoma City. Dinner/socializing, 6 p.m.; meeting at 7. Membership, $12/yr., includes monthly Broadcast News. Info: SASE to OKVRC, PO Box 72-1197, Oklahoma City, OK 73172-1197, or call (405) 722-0595 or (405) 755-4139 eves.

• **Ottawa Vintage Radio Club** — Meets monthly (except June and July) in Conference Room, Ottawa Citizen, 1101 Baxter Rd., Ottawa, Ontario. Contact: Tom Devey, 601-810 Edgeworth Ave., Ottawa, ON K2B 5L5, (613) 828-5152. Membership: $10 Canadian/yr.

• **Texas Antique Radio Club** — New club forming in San Antonio area. Meeting dates to be announced. Contact: Joe Koester, President TARC, 7111 Misty Brook, San Antonio, TX 78250-3498. (210) 522-1662.

SERVICE SOURCES AVAILABLE

The AWA Source Sheet is a listing of parts suppliers and services for the radio collector. Cost: only a business-size self-addressed stamped envelope to AWA, Box E, Breesport, NY 14816.

AWA SLIDE/VIDEO PROGRAM

The Antique Wireless Association has available several historical documentaries to loan to affiliated organizations for club meetings and programs. There is no charge for this service other than return mailing cost. For info on loan conditions, to make reservations, or just inquire, contact Richard Ransley, PO Box 41, Sodus, NY 14551. The following are available:

VHS VIDEO PROGRAMS

V-2 — "Electrons on Parade." 18 min. 1938 movie made at RCA's Harrison Plant showing production lines with closeups showing receiving tubes, including a short sequence on transmitting tubes. (Very rare movie.)

V-4 — "The British Receiver." Documentary of the AWA/BVPS meet with visit to Marconi's Chelmsford plant, the British Science Museum, and ending with series of collectible British receivers. (VHS program transferred from slides.)

V-5 — "The Early Years." Historical documentary narrated by Clarence Tuska telling of the early years of amateur radio, founding of the AARL and WW I military radio training school. (VHS program transferred from slides.

V-6 — "The Key." History of the telegraph/radio key covering early hand keys, semi-automatics and commercial types. Script by Lou Moreau, W3WRE. (VHS program transferred from slides.)

V-9 — "The Transatlantic Tests and 1BCG." Rare documentary/photographs showing early amateur operation leading to famous 1921 transatlantic tests.

V-12 — "Those Wonderful Magazine Covers." The story of radio through magazine covers. Colorful with period music.

V-15 — "The WHAM Story." Details development of a pioneer radio station in Rochester, NY. Program developed with assistance and recollections of Art Kelly, the station's former general manager.

V-16 — "The Charles Herrold Story." Video prepared by Mike Adams who donated this copy to the AWA. It documents the work of broadcasting's Forgotten Father who started broadcasting in 1912.

SLIDE PROGRAMS

S-1 — "Portrait of a Pioneer." The life of Elmo Pickerill.

S-2 — "Polar Adventure." Pictures taken by Bud Waite and his narration describing numerous trips to the Antarctic over a 35-year period.

S-3 — "70 Years of Vacuum Tubes." Describes the history of vacuum tubes.

S-4 — "The Early Years." (See description for V-5.)

S-7 — "The Transatlantic Tests and 1BCG." (See description for V-9.)

S-8 — "Trip Through the AWA Museum" Covers exhibits and equipment.

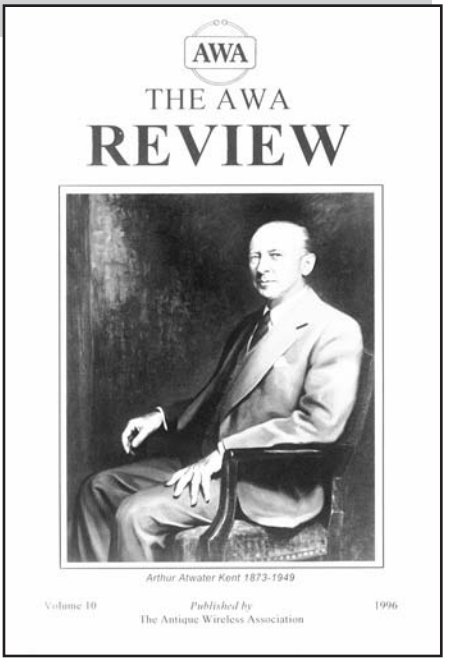
S-12—"The Key." (See description for V-6.)

AWA NETS (EST)

PHONE:

Sun.	7247 kHz, SSB, noon (NCS: N4FS); 3837 kHz 3837 kHz, AM 4 p.m. (NCS's: W2ZM & W2AN)
Tues.	14274 kHz SSB, 2:30 p.m. (NCS's KC3YE and W0FXY) 3837 kHz SSB, 8 p.m. (NCS N4FS)
Mon.-Wed.-Fri:	3867 kHz, 9:30 a.m. (NCS: W2HSN)
CW:	Daily, 4 p.m., 7050 kHz (NCS varies) First Wed. of each month, 8 p.m., 7050 kHz
2-M REPEATER (Rochester Area)	Mon., 7:30 p.m. (NCS: W2ICE) Receive 146.820 NHz; transmit 146.220 MHZ

AWA Review Now Available



Beginning with Vol. 1 of The AWA Review in 1986, the Antique Wireless Association has sought and published the efforts of dedicated workers who have researched and documented the records of past events associated with the history of wireless communications. Eleven years later, Vol. 10 continues this established tradition by presenting six papers by experts on their respective subjects.

• The lead paper, by noted AK authority Ralph Williams, presents the person Atwater Kent as a master of the art of marketing.

• Mike Adams, the Charles Herrold Expert, has taken his research into the realm of the development of the radio-telephone with an extensive and landmark article on the five key individuals and the technology which made it happen.

• Chris Bacon has recounted the history of RCA's Radio Central, the huge radio transmission facility at Rocky Point on Long Island, which was so prominent in world affairs for over six decades.

• Al Jones and Hank Olsen, historians and tube experts, have written the story of Heinz and Kaufman and its landmark legal battle with Sarnoff and the Radio Trust.

• Parker Heinemann describes the formation and the early years of the Collins Radio Co., and includes some superb photos of early Collins transmitters.

• Finally, long-time contributor Floyd Paul describes the early years of the Gilfillan Radio Co. and includes photos of some desirable collectibles.

Volume 10 of The AWA Review may be ordered from Dexter Deeley, 8 Briar Circle, Rochester, NY 14618. Its 261 pages contain some 190 illustrations. Price $20.00 postpaid (continental U.S.). Write for foreign pricing.

Final Call for Papers for the *AWA Review* Vol. 11

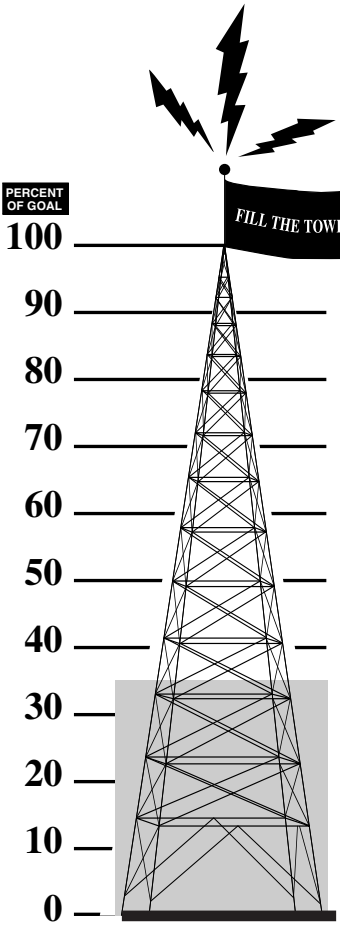
At this time we do not have enough papers to warrant the expense of publishing a 1997 *Review*. We have to have between 180 and 260 pages of good material and a minimum of 5-6 papers. So far we have less than half that, and the deadline for initial submissions is March 1.

Highest priority is given to articles about sequences of radios by a manufacturer, presented with enough illustrations to be of interest and value to collectors. There have been many such presented in other publications over the years, some with different readership, and we would not be averse to accepting such material from original authors for reprint, with attribution.

The theme for 1997 is "Television", and we have yet to receive a lead paper, though I have discussed some possibilities with potential authors. Please contact me by phone at (717) 629-0637 if you think you may have something.

— Bill Fizette, W2DGB, *AWA Review* Editor

MUSEUM FUND DRIVE REPORT



Our museum building fund now stands at over $26,000, contributed by over 225 members. This brings us to 35 percent of the fund goal.

We are very grateful for the monies contributed so far, and are pleased to honor all contributors on these pages. If you haven't yet made a contribution, why not consider joining the ranks of the members who are helping us in this good cause?

AWA Building Fund

Those who would like to donate saleable equipment instead of cash are definitely invited to do so. The donors' names will appear on these pages along with the donors of cash gifts, and all gifts will be acknowledged with a letter that can be used for income tax purposes.

Other vehicles which the members can avail themselves of to aid in this drive are matching funds from corporate sponsors and donations from estates, including both equipment and soft goods such as libraries and special bequests.

Each issue of the OTB will include a report on the progress of the building fund along with an updated donor list.

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CORRECTIONS TO *THE AWA REVIEW*, VOLUME 10

1. The correct zip code for the AWA in Bloomfield, NY is 14469.

2. On p. 137, in the second line of the last paragraph, the correct spelling of the name is Hansen.

3. On p. 153, in the last paragraph, reference is made to Paul Goddard. The correct name is Paul Godley.

4. Footnote to be added to p. 154: (Courtesy of reviewer Robert M. Morris. W2LV): *The author might well have included the receipt of signals in 1935 from the stratosphere balloon Explorer of the U.S. Army Air Corps-National Geographic flight to an altitude record of 72,395 feet above earth, on 13,050 mHz.*

5. On p. 158, in the second line of the last paragraph, the correct phrasing is "should be possible."

6. On p. 189, there are two uses of the word "monopolistic" the second one is misspelled.

7. On p. 214, in the fifth line from the bottom, the word "being" is misspelled.

8. On p. 216, the firm name Borg-Warner was incorrectly spelled "Brog-Warner."

9. On p. 223, the word "lightning" is misspelled.

10. On p. 241 (the Collins Radio Company) the captions for figures 12 and 13 have been transposed due to a printing error. The caption for the 4A transmitter on p. 242 is correct.

11. Preliminary editing for the Gilfillan Bros. story beginning on p. 245 was done by previous *Review* editor Ludwell Sibley during 1994.

LETTERS TO THE EDITOR

All letters to the Editor are read with interest and attention, though not all can be published in this column. Letters may be paraphrased, shortened or otherwise edited to fit the available space. The statements made by our correspondents are their own opinions and do not necessarily reflect the views of either the OTB *staff or the Antique Wireless Association.*

More on Fessenden

May I make a comment on James P. Rybak's interesting article on Fessenden, regarding his extra item on the alternators, on page 16. This correctly says that GE's Steinmetz succeeded only in producing an alternator capable of l0kHz; and that later Alexanderson achieved 50kHz.

But what is not mentioned is the account in Helen Fessenden's book *Builder of Tomorrows* – which Rybak includes in his bibliography – of how Fessenden and his own machinists rebuilt the rotor of the GE alternator to give 70-80 kHz and then another to give l00kHz. It was only after this that Alexanderson was spurred on to produce the high performance alternators for which he is justly famous. Of course Fessenden's wife was hardly a disinterested biographer, but I have not heard of any reason to disbelieve her account.

Another comment relates to Fessenden's first entertainment broadcast on Christmas Eve 1906, which Rybak promises to discuss in Part 2 of his article. The conclusion of Part I hints that reception of this was achieved by ships equipped with the Liquid Barretter, which of course is true. But I wonder whether Part 2 will take account of any ships in the vicinity employing Marconi's Magnetic Detector as their receiver, very popular for marine use since it could not be thrown out of adjustment by buffeting from the ocean waves. The Magnetic Detector, like the Liquid Barretter, was a continuously operative instrument requiring no re-setting after receiving a signal and was hence capable of demodulating telephony transmissions. My friends are often surprised to hear my Maggie working in this mode: it produces perfectly intelligible results, albeit with a signal/noise ratio of about 1:1!

Pat Leggatt
Surrey, UK

Thanks very much for your very interesting comments on the Rybak story, Pat. Jim does cover a 75 kHz Fessenden rebuild in Part 2, which appears in this issue.— Ed.

Wanted: Lilenfeld Background

I read with interest the Letter To The Editor on page 10 of the August, 1996 *Old Timer's Bulletin*, concerning the transistor work of the late Dr. Julius Edgar Lilienfeld. The article mentions the Canadian application, as well as the U.S. application filed in 1926, later issued as U.S. Patent #1,745,175.

I am enclosing a copy of U.S. Patent #1,745,175, as well as two additional Patents issued to Lilienfeld in the transistor area: #1,877,140 and #1,900,018. Clearly, Lilienfeld conceived of the metal oxide semiconductor/field effect transistor many years before this device was made into a practical reality at Bell Labs and other manufacturers.

Unfortunately, very little is known with certainty about Lilienfeld's employment or the locations of his laboratories during his long and prolific career. The records show that he was awarded about 50 U.S. Patents between 1920 and 1960. His interests were broad as the patents cover X-ray tubes, electrolytic capacitors, loud speakers anodizing methods and electrolytes, elastic fabrics for structures, furniture, and garments, visual copying equipment, power factor measuring and correction circuits, among others.

It is known that he worked at Amrad from 1928 to 1930, at which time he purchased the R&D facilities, renaming the Laboratory "the Ergon Research Labs," The lab closed in 1935 and Lilienfeld moved to the Virgin Islands.

It would be valuable to know Lilienfeld's whereabouts in the early 1920s (between his work at the University at Leipzig and Amrad) and after he moved his residence to St. Thomas in 1935. The contents of any surviving notebooks or records of Lilienfeld's work would also be of major interest to historians of science and technology.

I would ask that you print this letter and would appreciate hearing from any reader or staff member having information concerning Lilienfeld's work or records.

Brian Melody
207 Roper Mountain Extension

Greenville, SC 29615
Tel. (864) 281-0722

Anyone Need a VY2?

The AWA has recently received an interesting note from Robert Losonci [Losconi Export-Import, Warenhandels Gmbh, A-1130 Wien, Fleschgasse 34 — Tel (+43-1) 876 78 83 — Fax (+43-1) 876 78 83 / 29]. *The two variations of Losonci's name are as the appear in his letter.—Ed.* A radio collector and authorized dealer for Tesla audio tubes, he is considering reproducing the German VY2 rectifier tube.

The VY2 is used in the 1938 "Volksempfanger" set, over a million of which, Losonci tells us, were manufactured by the Nazis. If he receives enough orders, production will begin for May, 1987 delivery. The price in the U.S. is $14.00 plus postage.

This offering has not been investigated by the AWA or the OTB and does not have our official backing or recommendation. We're merely passing along the information as an matter of interest to members who may be looking for this tube. Those who are considering the offer will want to investigate further before making a commitment.

An MOPA in ECO's Clothing

I read with interest the article by Frank J. Lotito, K3DZ, in the November OTB. He has shown us a fine circuit for an oscillator-transmitter with good keying and stability characteristics. I have to take exception, however, to his use of the term MOPA . . . . .These transmitters employed a self-excited oscillator stage driving a power amplifier stage, two tubes.

In 1942 I was a flight radio operator trainee for Pan American Airways in Miami. The first commercial transmitter I ever keyed was an MOPA on an old Consolidated Commodore flying boat, the predecessor of the PBY. It was used at that time for navigation training flights and still had the older radio installation consisting of a 210-210 MOPA transmitter and a regenerative receiver. The transmitter was remarkably stable, the frequency determining circuit being adjusted "on the bench," and not touched in flight. It was located back in the tail of the aircraft.

George C. Andrews
Russellville, AK

The November, 1996 OTB article "A 160-Meter Single-Tube Power MOPA Transmitter" was well written, thorough and interesting, but did not describe a MOPA transmitter. MOPA means "Master Oscillator-Power Amplifier," and uses two stages (exclusive of any modulator or power supply). Its advantages include low cost, low power requirements, and the frequency stability obtained by isolating the oscillator from the antenna. All of these were important to the military for application in small field sets and to the young hams whose fortunes were measured in pennies.

As the author also mentions, his design is called an ECO or "Electron Coupled Oscillator." The wealth of little-known detail makes it evident that he thoroughly understands his subject and I enjoyed his article. The ECO was liked because the screen grid acted as the plate of a triode Hartley oscillator whose plate is normally grounded (for RF) by its bypass capacitor.

This grounded screen grid shields the signal grid from the r.f. voltage on the plate which tended to prevent any plate loads (like an antenna) from affecting the frequency of the grid-cathode resonant circuit. The normally-grounded suppressor grid provided additional isolation between the plate and signal grid. Thus, the ECO has some of the advantages of a 2 stage MOPA in that there is some isolation between the input and output of the tube, but it is not an MOPA transmitter.

By using a quartz crystal in lieu of a coil and capacitor resonant circuit, a one-tube ECO transmitter was made even more stable. The crystal had a Q of several thousand, which held the frequency "rock solid."

Frank's design using a variable frequency resonant circuit is more "daring" and a tribute to his skill. His tapping the grid connection down on the coil is seldom understood, but contributes greatly to stability. It was actually patented by Lampkin in the late 1930's to use in his heterodyne frequency meters which were well regarded by industry.

Mr. Lotito obviously knows his subject, but the necessity for the detailed steps he took to "tame" this ECO were the reasons the MOPA was developed: i.e. to have a transmitter that provided a stable frequency by separating the oscillator from the antenna.

George W. Hails
Arlington Heights, IL

Frank Lotito's "MOPA" construction article attracted a lot of interest and drew quite a bit of mail. While almost everyone who wrote in spoke very highly of the interesting little transmitter and the thought that went into its design, we got our wrists roundly slapped for referring to the rig as an "MOPA" transmitter. George Hails has clarified the issues very succinctly in his letter above.

The Lotito transmitter was patterned after a rig written up by A.J. Spriggs (W3GJ) in Gernsback's "1934 Official Short Wave Manual." Dubbed "A One-tube Master oscillator Power Amplifier Transmitter," the circuit used a UX-860 screen grid r.f. power amplifier. Back when MOPA rigs were in common use, knowledgeable readers would have undoubtedly recognized Spriggs' title as "catchy," a deliberate contradiction in terms.

Spriggs recognized that he had an ECO transmitter but, playing up the inherent isolation between the input and output of the tube in such a circuit (see Hails' letter), he stated "....The overall effect is similar to the action in a master oscillator-power amplifier transmitter, the action of the frequency determining portion of the circuit and the filament, control grid and screen grid of the tube being similar to the action of the master oscillator, and the action of the screen grid, plate, and output circuit being similar to the action of a power amplifier stage."

In any case, since the Spriggs circuit was the inspiration for Frank's project, it was quite natural for him to use the Spriggs title as the inspiration for his title. And that, gentle readers, is how Frank's ECO came to be called a MOPA rig.

I also received letters calling our attention to some capacitor value errors in the parts list. Here your editor must take sole and personal responsibility. The capacitance units for the following capacitors were accidently given as pf (picofarad); they should have been in µf (microfarad): C1, C2, C5, C6, C7, C8. The numerical values for these capacitors remain as shown.

Some additional notes provided by the author: (1) The value of L4, which was not provided in the parts list, is not critical; a 2.25 henry unit was used. (2) Change note 5, at the end of the article, to read: "Oscillators may operate on more than one frequency if over-coupled, or if parasitic LC constants are present." (3) Add the following sentence to follow note 5: "If parasitic oscillation is suspected, a 100-ohm, ½-watt carbon resistor inserted between tube socket pin #5 and the junction of C3 and R1 may eliminate it." — Ed.

Radio Museum For Sale!

I have been collecting old radios since 1936, and have over 1000, all types, dating from 1923-1953. There are sets from thirty to forty manufacturers, mostly European. This collection is housed in 10 rooms. Another room houses about fifty old television sets, and I also have a complete antique radio service workshop. I would like to hear from interested buyers or people who might be able to suggest the best way of marketing this collection. I will be glad to show the collection to visitors or send photos. I also have a videotape of the museum (only available in system WHS).

Eric Lofberg
Dejfors Herrgard (estate)
S-669 32 DEJE
Sweden
Tel. or Fax: 46 552 41950
Home Tel.: 46 552 41953

Tube Info

Can anyone crack the date code on 1950's and 1960's General Electric tubes? It is made up of a pattern of dotes etched on the envelope next to the tube number. The same type of code appears on GE-manufactured tubes of other brands (often marked with GE's RMA identification number 188-5).

How about the RCA and Sylvania letter codes from the same period?

The "S" logo on the mystery tube's base (p. 45, November, 1966 issue) belonged to the Shaw Insulator Company, maker of tube bases for Moorhead, de Forest. etc. I'm pretty sure Shaw is mentioned in Tyne's "Saga." I don't know when Shaw went out of business, but he may have been around in 1925, the probable vintage of the tube described. If not, the base may have been salvaged from an older tube.

Alan S. Douglas
Pocasset, MA

WERS Anecdotes/Artifacts Needed for Conference Program

Radio amateurs by the thousands were drafted into the armed forces during World War II. But many who were too young, infirm or old for military service stayed home to participate in civil defense. Fear of enemy air raids led the FCC to establish, under the auspices of the Office of Civilian Defense, the "War Emergency Radio Service." Participants, including both amateurs and non-amateurs, operated on the amateur 2½-meter band (112-116 mHz).

Robert E. Grinder, K7AK, who was licensed as KGCL-80 in the Los angeles County WERS net, will talk about his experiences as an operator in the program. His commentary will emphasize: the objectives of the WERS program; impediments to implementation; adaptations of 1930's technology and commercial equipment; and the post-war impact.

WERS paraphernalia, including logs, maps and equipment, will be displayed. AWA members who had experience with WERS are urged to contact him regarding either anecdotes to share or equipment to display. Call Bob at (602) 948-2743 or e-mail him at atreg@asuvm.inre.asu.edu.

Niagaradio '96

By Larry Babcock

Snowed in? Too cold to go outside? Got cabin fever? Well maybe it's fortunate that the Rochester Conference news crowded this NWFA/AWA meet report out of the last OTB. Now we can sit back and let Larry take us back to the balmy days of last August when the sun shone warmly over the flea market tables....

The joint AWA/Niagara Frontier Wireless Association meet has been growing, and this year (August 10) it was the largest ever. Held at the Amherst museum near Buffalo, NY, it drew 173 paid admissions for the day-long fun of flea market, auctions and presentation.

The AWA was extremely supportive and provided speakers, as they have for the past several years. Of course I don't think they mind doing this. They seem to enjoy coming to these NFWA meets!

The weather could not have been better and the Amherst museum offers a beautiful, spacious country location with the flea market in a park like setting and plenty of room for an almost unlimited number of collectors. Sales were brisk. My wife, Dot, ran my table and took in about enough to buy our groceries for a month (I let her keep everything she takes in so she is happy to come and assist.)

One collector from Canada showed me an unusual round wood speaker he had just purchased for a small amount. It looked like a cone type except for the offset grill on the front. It really was a horn with the driver in the base. I wish I had seen it first. I saw Jim McGrath showing Bruce Kelley a McElroy bug. Bruce said, "Wow, did you really just find it here?" Jim said that he did and that it completes his collection of Mac keys. He also said another collector wanted it 10 seconds after Jim bought it. So some goodies did turn up.

There were three auctions which lasted almost two hours. First was the auction of a large trailer load of radios and related items from the John Myers estate. There were 65 lots. Many lots were boxes full of radios, tubes or parts. There wasn't time to sell every item separately. That's why it was sold by the box full.

One lucky bidder snagged a Sola constant voltage transformer for $5. A very nice Signal Corps tube tester in a metal case went for $39, and a pair of average RCA 100-A speakers brought $10.00. A good looking early 10" Motorola TV sold for only $5, and consoles were going for $25 to $32. This included one Sparton with doors and legs. It was complete but needed to be refinished. A lot of bidders went home

It was a beautiful day for the meet! Here's wife Dorothy at my table.

happy with their purchases.

The main auction was followed by an auction of sellers' personal items. These were sold with no commission, the seller receiving the bid price. Finally a group of items donated to the NFWA went on the block. These donations are very helpful and allow the club to continue its practice of charging only a $3 per person entry fee, including as many tables as you wish to set up!

The $3 entrance fee also included admission to the museum, which opened at 12:30. The exhibits are numerous, and include an entire building devoted to early Buffalo-area aircraft artifacts. Of course, there is also the NFWA radio exhibit. This fills an entire room and includes both radios owned by the museum and a group of artifacts owned by NFWA members that is changed annually.

Finally there was an excellent talk on the life and work of Clarence Tuska, who was co-founder of the ARRL. The presentation was made by Dex Deeley and Bruce Kelley. Bruce knew Tuska personally and had even been to his home so the audience received a lot of inside information. There was also an exhibit of 5 Tuska radios and slide photos of many others. The NFWA is proud to have AWA officers as speakers, and their participation certainly helped increase attendance.

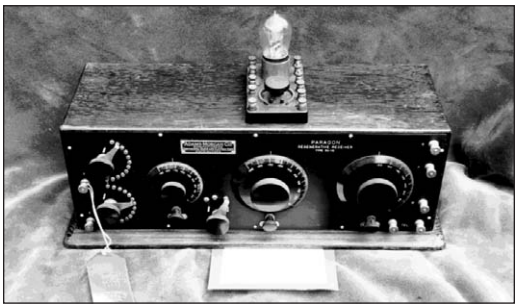
There was also an equipment contest. In the category of "Kit Crystal Sets," Gary Parzy received a first place ribbon for his Wee-Wizard. Second went to Howard Kraus for his large homebrew and third to Howard for a small homebrew set. Larry Babcock received first place in the one tube category for his Adams Morgan, Paragon RA-10 with single VT control. Marv Hess was awarded second for a Clapp Eastham #HR. Ken Blakeman received a third place ribbon for his Splendid Senior.

In the four or more tube category Gary Parzy won the first-place ribbon with his Marvel entry. The red ribbon went to Lloyd Swackhammer for his Model 59 Crosley repwood cathedral. Marv Hess won first in the Earphone category with his Neufeldt & Kuhnke German set, and Gary Parzy took second with his Brush on a stick phones. Larry Babcock took third place with a display of 7 pairs of headphones.

The NFWA wishes to thank our new member, Ken Ruggiero for the excellent job he did to advertise this meet and in particular to notify new collectors through the local media. I'm sure this was of great help in attracting the large crowd that attended.

This meet is an annual affair. If you missed it you should try to come next year and yes, there will be another large load of old radios from, the John Myer's estate to auction again at NIAGARADIO 97!

Bruce Kelley, who contributed to Dex Deeley's Tuska presentation, poses with some of the Tuska sets that were on display.



Adams Morgan Paragon won first prize in the one-tube category.

The NFWA built this replica of a vintage radio storefront to house rotating exhibit of member-owned radios.

The Transistor: Older Than We Think

by C. Orval Parker

Responding to the correspondence concerning Dr. Julius Lilienfeld that appeared in our last two issues, Orval Parker called our attention to this article, which was originally published in a 1987 Antique Radio Gazette. We are pleased to reprint Orval's article here.

"Is this actually new?" is a question that has been asked many times in the history of electronics. And when solid state developments are under discussion it should be noted that a solid state triode radio utilizing the equivalent of a field effect transistor (FET) was invented in 1925.

According to Ann Murphy's review of semiconductor history in the February 15, 1979 *Circuit News*, Dr. Julius E. Lilienfeld of Brooklyn, N.Y. constructed radio receivers incorporating what he termed a "method and apparatus for controlling electric currents" on which he applied for a Canadian patent in October 1925.

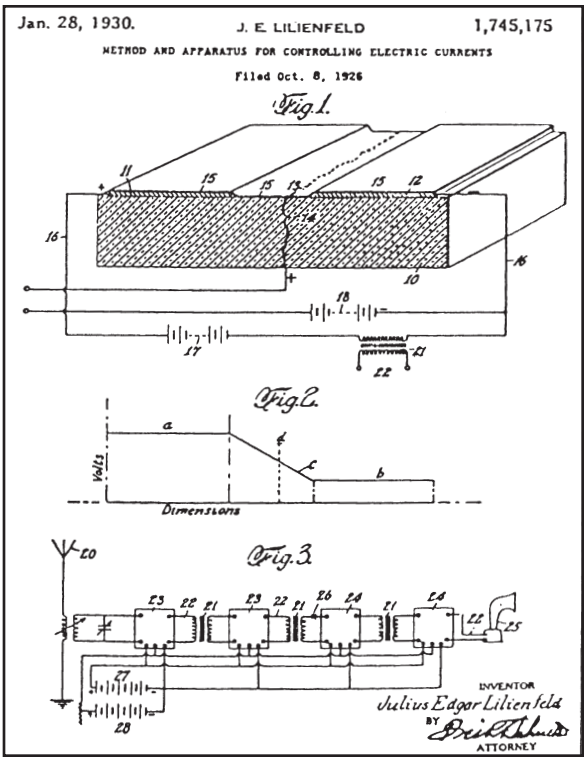
In October, 1926, an application for a similar U.S. patent was made. It incorporated (control) elements which had the basic characteristics of field effect transistor. The U.S. patent (No. 1, 745,175) was granted January 28, 1930, and other, related, patents were granted to Dr. Lilienfeld in 1932 and 1935.

Lilienfeld was of Polish birth and had been a professor of physics at the University of Leipzig, Germany, where he assisted in the development of the Zeppelin airship. Coming to the U.S. in the early 1920's, he is known to have developed applications for Roentgen Radiation. He became a U.S. citizen in 1935 and died in 1963.

The state of technology in the 1920/1930 era did not provide a vocabulary for Dr. Lilienfeld to adequately define the conductivity modulation by minority carrier injection in semiconductive surface layers. This communications barrier perhaps explains why the granting of the patent was delayed for over four years in an era when the most usual processing time was a few weeks. The inadequate control of conditions and materials at that time certainly contributed to the in consistencies of manufacture and operation of the device as specified in the patent claims.

Other prior art that is pertinent is a British patent granted in 1935 to Osker Heil of Germany clearly outlining an F.E.T. device. Of course, the completely-defined U.S. basic F.E.T. patent was

(continued on page 62)



Lilienfeld's 1930 U.S. patent for a "Method and Apparatus For Controlling Electric Currents" included specs for a radio receiving set using the technology.

The Atwater Kents That Never Were!

By John Okolowicz and Ralph Williams

One day in September, 1994 (to be specific the Monday before the AWA Rochester meet), I was digging through the vast array of industrial design information stored at Syracuse University. Many of the big names, such as Vassos, Teague, and Dave Chapman, have some works stored there thanks to the efforts of Arthur Pulos, one of the first great designers turned teacher/historian. I had made arrangements for a side trip to visit the collection on the way to the meet.

As my day in the bowels of Syracuse's cold meat cellar of an archives warehouse wore on, the hours of poring over box after box of drawings had not yielded much of interest to a radio lover. My eyes had grown weary and my mind was begging for a diversion.

Glancing through a listing of people whose archives were kept at Syracuse, the name Lurelle Guild caught my eye. Ever hear of him? Neither did I, but the name was distinctive and I began to look through some of the over 70 boxes containing his materials. I wasn't expecting to see much of anything, but I came across a reference to Atwater Kent! Hmm, what could that be about?

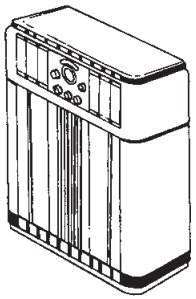
Digging deep in the box, I removed a thick stack of overstuffed manila folders chock full of obscure correspondence, household bills, and miscellaneous notes. Gee, I thought, did this guy ever throw away anything? What a pack rat. But, sure enough, there they were: blueprints for a few late model Atwater Kent sets intermixed with some correspondence between Guild and the people at the AK company. They were not readily identifiable radio designs and there was no indication of model numbers on the drawings.

To boot, most of the blueprints were of consoles, a not-so-collectible species. So, what the heck, I thought, rather than leave empty handed, I'll make copies of these things and run them past Ralph Williams. If anyone can shed some light on these AK radios, he's the man.

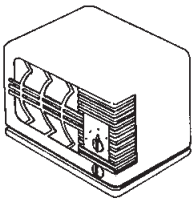
When Ralph first saw the drawings at the AWA conference his eyes lit up as he exclaimed that they were "the sets that never were." AK had gone out of business before any of these designs could be realized. Happily, Ralph agreed to provide some additional perspectives on the designs for this article. And John Wolkonowicz, another big fan of AK history, cleverly suggested that the blueprints be sketched out in 3 dimensions to bring Guild's ideas to life. Lurelle's obituary in the local Darien CT newspaper was a bit shocking in its brevity considering his illustrious career. The small notice described him as a long time local resident and volunteer fireman. A staggering finale for a man who has been attributed to hold the all time record for the most design patents.

The groundwork for Lurelle Guild's career

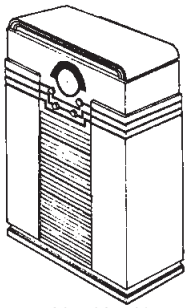
Below and right:Recreations of Guild's proposed AK cabinets. Note design dates. Dimensions are in inches.



37.25 × 24.5 × 10.75
2/27/36



10.875 × 8 × 7.25
3/24/36

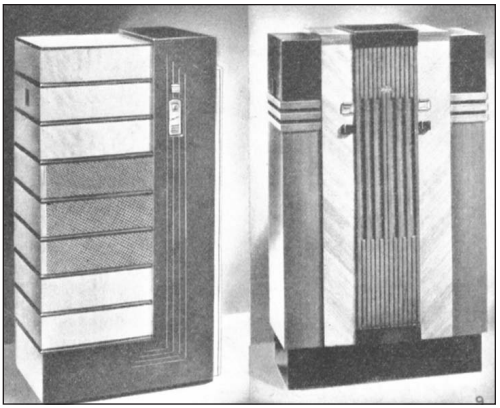


36 × 23 × 10.75
2/27/36

was laid at Syracuse University, where he graduated with a degree in fine arts. He quickly found work as an illustrator, and his covers and product advertisements began appearing in national magazines such as House and Garden and Ladies' Home Journal. His talents eventually came to the attention of some major companies who then persuaded him to design their products.

Industrial design as a profession did not exist at this time and it seemed natural for manufacturers to use the skills of artists in this manner. Not all such marriages were successful. The more complex an item, the greater the likelihood that the "stylist" would create something unmanufacturable.

Designers who did not understand the materials of which their products were made or the processes used to manufacture them failed miserably. New plastic substances such as bakelite, beetle, Catalin, etc. were appearing overnight. In addition, strides were being made in the use of pressed metal forms shaped from chrome and aluminum.



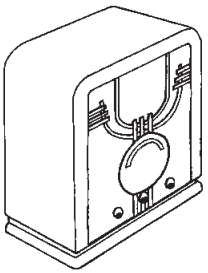
Majestic's 1934 Park Avenue and Lido models featured pioneering deco designs later mirrored by Guild in his work for Atwater Kent.

Guild met these challenges and easily progressed from designing interiors to designing linoleum for Armstrong, cookware for the Wearever Company, a refrigerator for Norge, and eventually just about anything imaginable. His most famous design, the Electrolux canister vacuum cleaner of 1937, has been featured in just about every machine-age design exhibition.

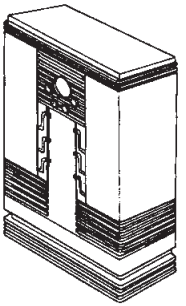
A prolific worker who created over 1000 products a year and wrote hundreds of articles, he was widely regarded in the 1930s as one of America's top 5 designers. Unlike most of his contemporaries, he was not afraid to admit that he deliberately "designed down" to the low level of public taste. Guild knew what he was talking about; he was a pioneer in the use of market research techniques at the grass roots level.

Success gave him the opportunity to indulge his strong interest in antiques. Eventually, he had an entire early American village transplanted from New Hampshire to his hometown of Darien, CT to house and display his vast collection. "Milestone Village," as it was called, was opened to the public for a time in the 1960s, but has since been closed. Guild's exceptional expertise in this area led to the publication of his book, The Geography of American Antiques.

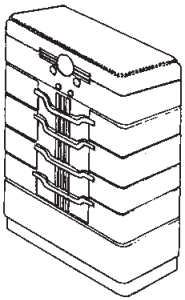
Although the proposed Atwater Kent cabinets shown in the accompanying illustrations never came into being, it still might be interesting to comment on how these styles compare with existing designs of the time and also to speculate on some of the existing AK chassis that might have been used in them. These are the sets that might have been the 1937 product line had Atwater Kent continued his business.



15.75 × 13 × 6.75
3/26/36



37 × 23 × 10.75
2/28/36



37 × 23 × 10.75
2/29/36

Guild illustration for RCA Radiola 66 ad of 1930. The Deco look he proposed for 1937 AK line eliminated "furniture legs" and prominent speaker grilles like these.

First the styling. The mid-thirties marked a peak in the development of extravagant designs. "Eye Appeal - 1936 Radios Have it" boasted the title of an article in Radio Retailing. "With the rounded corners and streamlined inlays, some of the new designs make the old, cumbersome outfits that have been in use since the 20s look as if they might belong to the era of the kerosene lamp and the horse and buggy," declared The New York Times in a review of that year's newest radio products.

As the depression grew deeper manufacturers grew bolder. Knute Rockne's adage, "When the going gets tough, the tough get going" might serve as a metaphor for this era. Zenith introduced the magnificent 25 tube "Stratosphere" while Crosley countered with their 37 tube "WLS" five-foot-high behemoth.

Guild's console designs, while not anywhere near as extravagant as the Stratosphere or WLS, use avant-garde concepts pioneered by such manufacturers as Majestic (1934) with their very deco Model 776 "Lido" and Model 886 "Park Avenue" or Zenith with the 1934 "Aviatrix," and to some extent GE with its "A" series sets such as the 1936 A-125 console.

The trend was to do away with explicit furniture legs in favor of a clean unbroken cabinet extending to the floor. This modernistic approach may have been a spin off of the simplified designs emanating from the very influential Bauhaus design school in Germany. The Bauhaus was promoting more austere designs free of unnecessary ornamentation or applied art that typified the furniture of the early 1900s.

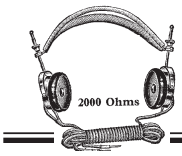
Conventional radio designs of the era accentuated the speaker area by using dramatically styled grille cloths. International Radio in 1933 departed from this norm in the handsomely designed "Kadette" midget radio series, camouflaging the speaker area with Bakelite strips. The speaker is similarly downplayed in the Majestic and Zenith sets mentioned earlier. Guild's sets followed this trend by using the inherent beauty of laminated wooden strips to disguise the speaker area. This simple change remade the lowly radio into an elegant room-enhancing accent piece and coincidentally offered the consumer greater protection from speaker cloth destruction.

The attractive "tombstone" cabinet proposed by Guild has many of the same features of Zenith's 4-T-26 which came out in 1936. Was Guild somehow involved in that one? Who knows? Guild's midget table model was a harbinger of the kind of Bakelite set that would dominate the marketplace in the years ahead. It closely resembles some of the later Crosley and Fada sets that we routinely see at radio meets.

As for how the 1937 product line would have looked with the Guild designs: the proposed consoles would have nicely accommodated the medium sized superheterodyne chassis as used in the previous year's model 717. This would have required a revised dial, which would have been a minor manufacturing change but a very significant styling change in styling. The consoles would also have accommodated the chassis from model 676 (which was an upgrading of 1935's model l976).

The console designs could have easily been

(continued on page 63)



HEADSETS

EDITED BY
Richard W. Mackiewicz
349 Walnut Trail P.L.S., Coventry, CT 06238
Please include SASE for reply.

Headset Update

This past year has yielded a record amount of new headset information. So I'd like to pass along a good number of clarifications and additions for my "Penultimate List of Headsets" (A revision of Lud Sibley's "The Ultimate List of Headsets) originally published in the May, 1995 *OTB* and updated in the May, 1996 issue.

I would like to express my sincere gratitude to all who have contributed information, including John Drew, Marvin Hess, Gary Schneider, Craig Smith, and Phil Weingarten.

My special thanks to Greg Farmer for his aid in my acquisition of Vince Highmark's headset collection. As many of you know, Vince was the "original" headset collector, and compiled the first master list of headsets and headset manufacturers. Vince will be missed by many, and I hope I can do an acceptable job of carrying on his work. Here are the changes in the list:

Add the following entries:

ATG Adjustable Diaphragm 2k
BTH 5k Stalloy Diaphragms pat. # 199678
Buckeye 3k Krauss Cincinnatti, Ohio
Canadian Independent Telephone Co. Ltd. 2k Toronto, Ontario
Cranfill 2k
Detroit Special 2k all alum. Detroit Radio Phone Co.
P. M. Dreyfuss Co. Inc. Concert Type 2k
Graybar 179W single 100 ohm pat. 7/7/14
HACO Betterbilt Supersensitive 2k U.S.A.
H.R.S. Hagenuk 4k
Le Material Telephonique 4k
Marshall Special Marshall Radio Products Chicago, Illinois
Meteor 3.2k large receivers
National Telephone Mfg. Co. Boston, Mass. 400 ohm single pat. 5/29/1894
No Name 400 ohm twin set 1 rcvr 1934PGS other 1934
No Name 2k ball joints France
No Name 2k Stalloy #12 Diaphragms pat. # 2507/13
Peto Scott*
Precision Phones 250 ohm Precision Bearing 5157 W. Grand Ave. Chicago, Ill.
Premier Electric Company Chicago 3k
S over F Adjustable (by rcvr. lock rings) 400 ohm 1934
Signal Corps New York City
Sterling Devices Mfg. Co. Chicago, Ill.
TEL 4k ball joints Beeston Notts England
Telephonics STODDART 10796 200 ohm
Telephonics TC 136 60 ohm N.A.F. plug
Trimm Dependable 2.4k alum. 2 variants
Ultra National Tone 2.2k
Jay Warren H-2 Jay Warren Inc. Chicago, Ill.
Weaver Electric 3k Syracuse, N.Y.
Western Electric Signal Corps Type 1911 2.2k
Wireless Cable Tester Co. Cedar Rapids Iowa 180 ohm single terminal block on rear
A. Zund Burguet Paris low Z ball joints

Remove the asterisk (*) from the following entries in the original list. (An asterisk next to an entry indicates a headset identified through advertisments but not yet reported in a collection.) If the wording of the original entry differs from the wording below, update the original entry to match:

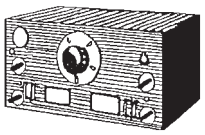
Keystone 1.5k American Elec. Co. Chicago
Music Master 2.5k
Penberthy Injector Co. 4k
Radio Supply Co. Hornell, N.Y. Clarion
Spartan brown Bakelite
Swedish American Balanced Tone 2.2k Chicago
Telephone Book Holder Corp. Danville N.Y. 2k
Telephone Book Holder Corp. Danville N.Y. TBH Junior
Workrite 2.6k

Update the wording of the appropriate original entries to match that of the clarified entries given below:

(continued on page 63)

THE COMMUNICATIONS RECEIVER

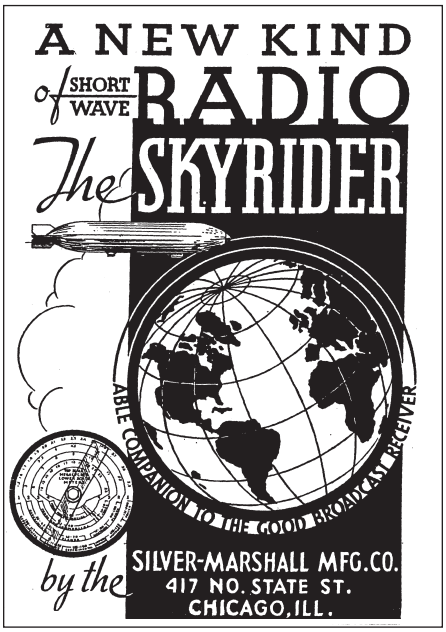
EDITED BY
William B. Fizette, W2DGB
RR 1, Box 55, Henryville, PA 18332
Please include SASE for reply.



The Hallicrafters "Sky-Rider" S-1 Short Wave Receiver

Radio collectors strive to have the first of anything...and they like to have the provenance of the item to be clean and well documented. The Hallicrafters S-1, the first of the famous Skyrider series of receivers, easily meets these requirements.

Sales and marketing are key to the success of any manufacturing company. Bill Halligan, an expert and experienced commercial radio operator, was also an experienced salesman, having worked in that capacity for the Tobe-Deutschmann Company selling radio-related products for five years. And he used this experience and his contacts in the industry to get his first radio products off the ground and introduced to the public.



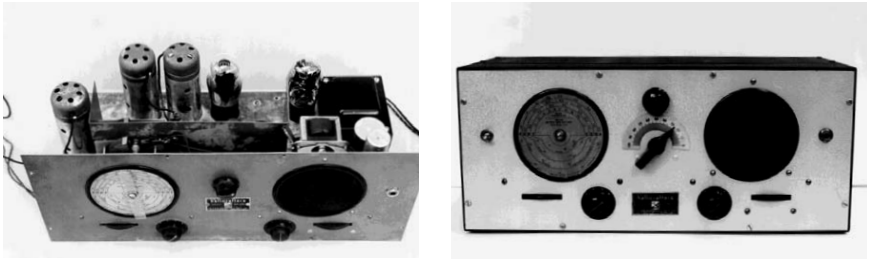
Cover of the S-1 manual. Hallicrafters name nowhere in sight!

He designed and then pre-sold his radios to radio retailers, such as Allied Radio, and with the orders in hand then went to the Silver-Marshall Manufacturing Company of Chicago to have the sets built. Why Silver-Marshall? They had the coveted RCA license, which Halligan did not. In due course he purchased an ailing radio manufacturer with the RCA license, another of the accomplishments of this remarkable man. Max de Henseler's book (see references) gives the details. And he did this in the midst of the world-wide great depression, with virtually no funds.

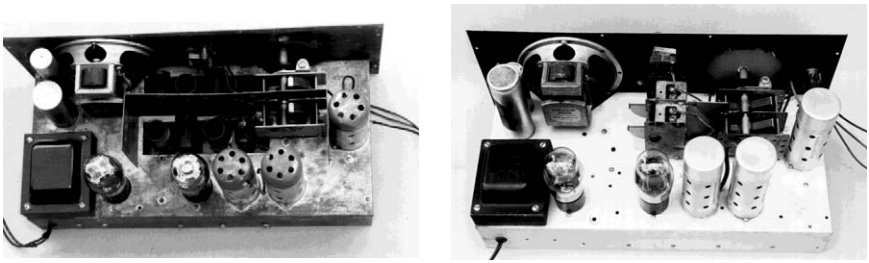
Bill Halligan formed the Hallicrafters Company in 1933 when he was 34 years old. The name has been described by one source as deriving from "Halligan's Crafters," or craftsmen. The "Skyrider" name was born in 1934, taken from the famous Sky Ride cars at the 1933 Chicago World's Fair. The first radio bearing the name, the Hallicrafters Sky-Rider (*as it was sometimes spelled in early advertising—Ed.*), was introduced in early 1934 and reviewed in *Short Wave Radio* in July, 1934. Ads were placed in *Radio* for June, 1934, and in *Radio News* for July, 1934.

Halligan had several things going for him. In addition to the timing, which was absolutely right, he was able to produce and market a complete short-wave receiver for the very low price of $39.95. His knowledge of the sales and marketing process and his radio industry contacts were invaluable. His design appeared to be forward looking, while at the same time it retained the familiar regenerative circuit, but in an easy-to-use form. The only accessory needed, and it was optional, was a pair of headphones.

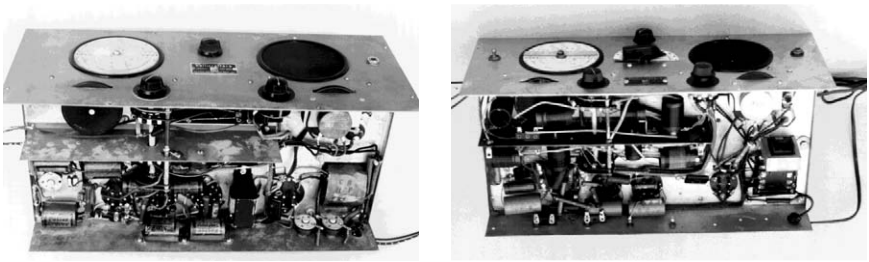
The tuning range was 1500 kc to 25 mc in four bands, switched from the front panel. No plug-in coils, and no BC band (this was a short-wave receiver). The five-tube circuit included the power pack, and a panel-mounted speaker completed the receiver. Edge-mounted tuning



Front panels of basic model (left) and the amateur bandspread model are similar, except for presence of centered bandspread dial on latter.



Note physical design differences between the basic model (left) and the amateur bandspread model.

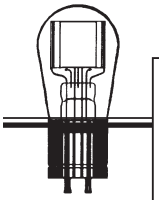


A look beneath the chassis of both sets. Potted bypass capacitors of the type installed in the basic model (left), were sold by Halligan.

and gain controls were not just design features; the main dial had an 18:1 vernier, making tuning of the short waves an easier task. The steel cabinet, of cane metal, provided adequate ventilation. To change tubes the top had to be unscrewed, the absence of a hinged lid contributing to cost cutting. The tube line-up was comprised of a 6D6 tuned r.f., a 6D6 as a regenerative detector, a 6C6 first audio, and a 42 audio output, with an 80 rectifier tube.

Three versions were offered: The basic receiver, which sold for $39.95; a special amateur version with electrical band-spreading which sold for $49.50; and slightly higher-priced battery models of each. In researching this article the owners of three S-1s were contacted and photographs obtained. These show significant design differences between the two basic models. The circuit (see schematic) is fairly conventional, but note the phone jack hook-up and the absence of audio interstage transformers. A very distinctive

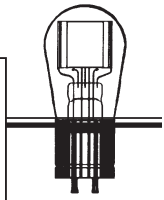
(continued on page 64)



THE VACUUM TUBE

EDITED BY

Bro. Patrick Dowd, F.S.C., W2GK
4415 Post Road, The Bronx, NY 10471-3499
Please include SASE for reply.



Vacuum Tube Reference Books

Over the years numerous requests have been received, through this column, to recommend tube reference books. In this issue we will attempt to satisfy those requests.

The following list of reference books is recommended as a basic library for the serious tube collector. The list is limited to books with which I am familiar, that are written in English and that are readily available in the current market.

All of these books are written by members of the AWA and, except as noted, can be obtained from dealers such as Antique Electronic Supply, 6221 S. Maple Avenue, Tempe, Arizona 85283 (602-820-5411). Other tube books and manuals are also listed in the AES catalog.

SAGA OF THE VACUUM TUBE by Gerald F.J. Tyne (THE BIBLE) ($18.95)

70 YEARS OF RADIO TUBES AND VALVES by John W. Stokes ($25.95)

75 YEARS OF WESTERN ELECTRIC TUBE MANUFACTURING by Bernard Magers ($16.95)

TUBE LORE by Ludwell Sibley. Order directly from Ludwell Sibley, 44 E. Main Street, Flemington, NJ 08822. (908-782-4894) ($19.95)

HISTORY OF THE BRITISH RADIO VALVE TO 1940 by Keith R. Thrower ($29.95)

ILLUSTRATED HISTORY OF PHILIPS RADIO VALVES TO 1935 by Fin Stewart. Order directly from Fin Stewart, 1 Perouse Ave., San Remo, N.S.W. 2262, Australia. ($15 sea mail, $20 air mail)

ELECTRON TUBE LOCATOR by George H. Fathauer ($24.95)

ELECTRON TUBE RESUMÉ by George H. Fathauer ($3.00)

DATING THE RCA (CUNNINGHAM) COMPOSITION-BASE TUBES by Brother Patrick Dowd ($2.50)

A rich source of tube articles may be found in back issues of the OTB and the AWA Review. Some back issues can be obtained from the AWA. Consult the periodic listing of available issues in the OTB. Other excellent references, now out of print, occasionally surface in flea markets and secondhand book listings:

VADE-MECUM (many editions)

CROSS INDEX OF ELECTRON TUBE TYPES, published by the Navy Bureau of Ships (many editions)

TUBE MANUALS, published by various tube manufacturers (many editions)

The following references to specific early vacuum tubes and tube manufacturers were compiled from various classic reference books by AWA Director Lauren Peckham:

AC Tubes
Radio Guide Magazine, Sept., 1926 (experimental AC tubes)

Amrad S Tube
Wireless Valve Transmitters, James, p. 138
Elements of Radio Telephony, Ballard p. 40

British Valves
Everyman's Guide to Radio, pp.186-189
Radio Telephony, Goldsmith, pp. 159-160 (round type TN)
Wireless Valve Transmitters, James, pp. 113, 144
Mullard Transmitting Valves, pp. 192-193 (characteristics of Mullard, M/0 Valves, etc.)

Textbook on Wireless Telegraphy, Stanley Vol. 2, p. 134 (photo of Marconi RF amplifier using Q valves); p.174 (N.P.L. valve description); pgs. 177, 194 (B.T.H. valves)
Wireless Telephony & Broadcasting, Dowsett, p. 121 (Marconi Q Valves); p. 124 (characteristics of Q valves).
Elements of Radio Telephony, Ballard, p. 14 (Mullard valves)

de Forest
Radio Theory & Operating, Loomis, p. 401 (photo of transmitting oscillion)
Principles of Radio Communication, Morecroft, p. 465
Pictorial History of Radio, Settel, p. 31 (photo of Arnold's high-vacuum tube and spherical Audion)
Principles Underlying Radio Communication, p. 470 (VT-2 and large Oscillion); p. 321 (CF-185)
Everyman's Guide to Radio, pp. 186-189, 175-176
Radio Telephony, Goldsmith, pp. 162-164 (Singer tube and related equipment)
Principles Underlying Radio Communication, p.321 (CF-185)

Donle
Principles Underlying Radio Communications, p. 470 (Sodion tube)
Popular Radio Magazine, April, 1923 (Sodion tube)

Dubilier
Radio Guide Magazine, July, 1925, (Dubilier B supply with UV-196 full-wave rectifier)

Emerson Multivalve
Radio Troubleshooting, Haan, p. 202

Fleming Valve
Textbook on Wireless Telegraphy, Stanley, Vol. 1, p.252 (Marconi equipment using Fleming valves, photo of four types)
Principles of Radio Communications, Morecroft, p. 448

French Valves
Textbook on Wireless Telegraphy, Stanley, Vol. 2, p. 126 (Kammarad by S.I.F); p. 151 (Métal type)
Principles Underlying Radio Communication, p. 321 (Métal); p. 470 (Métal)
Radio Engineering Principles, p. 164 (T.M. type); p. 172 (photos of T.M. type)

General Electric
Principles Underlying Radio Communication, p. 321 (Pliotron); p.470 (VT's 11, 12, 13, 14, 16, type U & type P)
Radio Engineering Principles, Lauer & Brown, p. 155 (type U/VT-18) Elements of Radio Telephony, Ballard, p. 45 (UV-203, UV-204)
Radio Theory & Operating, Loomis, p. 378 (UV-217 and X-ray Kenotron)
Principles of Radio Communication, Morecroft, pp. 449-451 (TB-1 and circuits); p. 465 (Pliotons)
Radio Telephony for Amateurs, Balantine, pp. 104-106 (type P, UV-202, UV-203); pp. 230-231 (types C/CG-890 and UV-201)
Vacuum Tubes in Wireless Communication, Bucher, pp. 121-124 (50 kV Kenotron, Type P, Langmuir Pliotron); p. 158 (Pliodynatron)
Radio Telephony, Goldsmith, pp.93-94 (type P); p. 101 (Hull Dynatron & Langmuir Pliotron); p. 174 (GE transmitter using early P tubes and Kenotrons)
Wireless Valve Transmitters, James, p. 192-193 (UV-202, UV-203 & UV-204) Textbook on Wireless Telegraphy, Stanley, Vol. 2, p. 170 (Langmuir Pliotron); p. 203 (Dynatron)
Elements of Radio Telephony, Ballard, p. 38 (x-ray Kenotron)
Electron Tubes, Hennery, FP-54 (Electrometer tube)

Leiben-Reiss LRS
Wireless Telephony & Broadcasting, Dowsett, p. 109 (LRS tube and oscillator unit)
Radio Telephony, Goldsmith, pp. 87-88 (LRS tube [154] and oscillating circuits used by Dr. Meissner
Textbook on Wireless Telegraphy, Stanley, Vol. 1, pp. 297-299 (LRS circuit and amplifier unit)

Loewe Multivalve
Radio Troubleshooting, Haan, p. 203

Miscellaneous
Radio Troubleshooting, Haan, pp. 179-184 (large tube characteristics chart for many types)
Radio Theory and Operating, Loomis (photo of unusual 110 volt power line tube)
Everyman's Guide to Radio, Yates, pp. 175-176 (photos showing Myers, de Forest VT-21, spherical Audion, foreign tubes of WW 1 period, Moorhead E.R. (Shaw base), Audio-Tron tubular, Japanese tubular; pp. 186-189 (provides excellent material on characteristics/applications of WD-11, UV-200, UV-201, UV-201A, UV-199, deForest DV-2, DV-6A, DV-1; W.E. VT-1, VT-2 and 216-A)
Textbook on Wireless Telegraphy, Stanley, Vol. 2, p. 177 (valves by the BTH Co., types A and B, info on grid structure)

(continued on page 65)

Opening the Atwater Kent Time Capsule

By Doug Crompton, WA3DSP and William Fizette, W2DGB

When Atwater Kent opened his radio factory on Wissahickon Avenue in Philadelphia in 1929 many of our members were living, but it is a safe guess that the majority have no direct knowledge of those turbulent times. Memories of the era, and specifically of Atwater Kent and his contributions, were briefly rekindled on Friday, October 25, 1996 when the U.S. General Services Administration, the present occupant of the original AK factory, held a "Time Capsule Unveiling Ceremony" prior to the demolition of the structure.

At the dedication ceremony in 1929, Mr. Kent had placed a number of significant items inside a copper box. The seams were soldered and the box placed inside a hollowed-out marble cornerstone inscribed "1928," the year the factory was built. The factory was one of the largest industrial plants in the world, built to incorporate some unusual and progressive ideas, including air conditioning and overhead skylights. At its peak it produced 5000 sets a day.

The cornerstone prior to the ceremony. It has been raised just high enough to clear the bottom of the copper time-capsule that rested inside it for almost seventy years.

Bill Fizette, Bill Denk and Paul Bohlander (l to r) were among the many AWA members at the ceremony.

The unveiling ceremony was opened by Paul Chistolin, Regional Administrator of the GSA. Following the invocation by Chaplain Melvin Wilson, of the Philadelphia VA medical center, we heard from Gerald Murphy, Deputy Mayor of Labor for Philadelphia, Thomas M. Lastowka, Department of Veterans Affairs, Philadelphia, A. Atwater Kent, III, the eldest grandson of Atwater Kent, Jeffrey R. Ray, Curator of Collections at the Atwater Kent Museum, Philadelphia, and noted Atwater Kent historian Ralph O. Williams, who opened the capsule.

After the lid was unsoldered with the help of a monster electric iron, what was found? Well, nothing that we did not expect. Mr. Kent had made a movie of the original 1929 ceremony, showing the

items being placed in the capsule, the sealing of the box, and its placement into the cornerstone. Due to the timely efforts of Peter Kent, another of the grandsons, a copy of the movie was obtained and overnight transcribed into video tape. The tape was shown before and after the ceremony. But it was still a thrill to see the artifacts removed from the box one by one.

First out of the capsule was the text of Mr. Kent's dedication speech, showing key words underlined for emphasis. Then came the five newspapers, one of each published on that day in Philadelphia. All were in remarkably good condition. And finally, the moment that the radio historians had been waiting for. To considerable applause, Ralph Williams and Jeff Ray carefully removed an AK Model 55 in its green steel case, complete with original instruction book, as Atwater Kent's grandsons and the audience looked on.

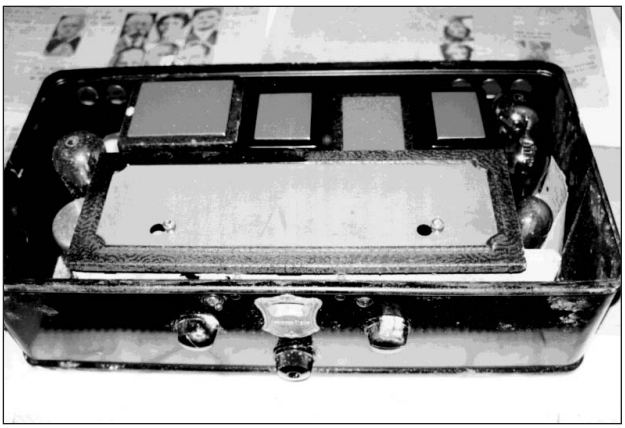
Ralph Williams, wearing gloves to protect the artifacts, holds Atwater Kent's dedication speech notes, the first items removed from the capsule.

At the time, this screen grid set was the latest in technology and was built to the usual high quality of all AK products. If it were not for some corrosion on the outside of the cabinet (probably due to a combination of the high humidity on the day it was placed in the box, and outgassing from the solder flux and the sulfate paper newsprint) and a little dust it would have looked as if had just come off the assembly line. The gold plated emblem was as shiny as the day it went into the box.

Photographers and the press were everywhere, turning the event into a mini media circus. All the local television stations were present and news coverage was given by all later in the day. Attendance was by invitation only for security reasons, and there were some empty seats. The audience included former employees and local dignitaries, a large contingent from the AWA, and other prominent collectors and historians. We estimated that 150 attended the event, which was held in front of the old factory, close to the cornerstone, under a tent. The weather was outstanding. Following the ceremony a catered reception was held inside.

The artifacts will be displayed at the Department of Veterans Affairs in Philadelphia, and a loan agreement has been arranged for later display at the Atwater Kent Museum. We wish to thank the GSA for the sensitive way they handled this historic event, all of the speakers, especially Ralph Williams, and all of the others who helped prepare for the affair.

We also have Mr. Kent to thank for leaving us these memorabilia of his major contributions to our country's heritage of entrepreneurism and innovation.



Except for a little corrosion, the Model 55 emerged from the cornerstone in mostly mint condition.

Mahlon Loomis and His Patent

by William E. Denk, W3IGU

Readers may recall that in my editorial for the previous (November, 1996) issue, I spoke of a writer who has begun putting together some material for the OTB on "The Unsung Inventors of Radio." Mahlon Loomis is certainly one of these inventors but, just for the record, Bill Denk is not the person who is working on that story!

As mentioned in his introduction to this article Bill, who is the OTB book reviewer, became interested in Loomis after reviewing a reprint of the inventor's biography. Having spent some forty years as a patent attorney, he was particularly interested the Loomis "wireless telegraphy" patent. Bill's interesting analysis follows.— MFE

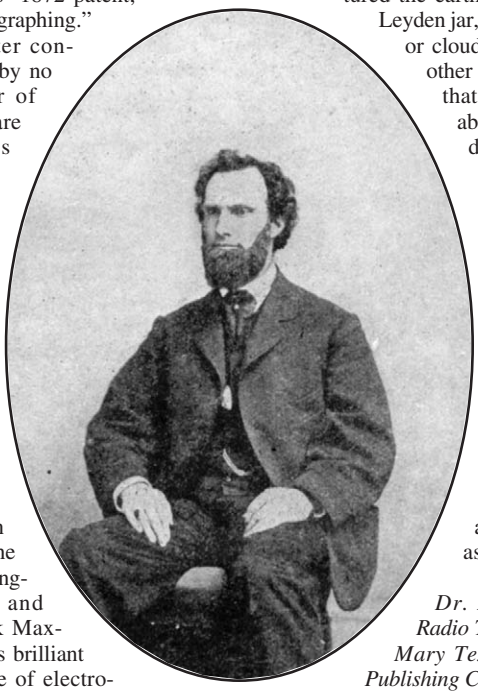
This re-examination of the life and work of Dr Mahlon Loomis and his patent was prompted by a reading of Thomas Appleby's book, "Mahlon Loomis, Inventor of Radio," (see Reviews, What's new in Print," this issue), and a study of Loomis' 1872 patent, "Improvements in Telegraphing."

Although this writer concludes that Loomis is by no means the "inventor of radio," he is well aware that Dr. Loomis has many enthusiastic supporters in the United States who, quite understandably, would like to think that radio was first invented not by Heinrich Hertz, a German, in 1881, not by Sir Oliver Lodge, an Englishman, in 1894, nor by Marconi, an Italian, in 1896, but rather by an American, Dr. Mahlon Loomis in 1864. That was about the time when that great English mathematician and physicist, James Clerk Maxwell, first published his brilliant theory of the existence of electromagnetic waves and their propagation through space.

Mahlon Loomis' starting point was conventional land telegraphy, with which he was well acquainted. He was impressed with the cost saving achieved when telegraphers found that one of the two wires interconnecting pairs of stations could be eliminated by the provision at each station of a ground return. Loomis also was aware at this time of the presence of atmospheric electricity. He would know of that from those early kite experiments of Benjamin Franklin.

In any event, Dr. Loomis then theorized that if he could utilize the electrical charge on clouds above his stations, he could eliminate that one remaining wire then being used to interconnect those stations. He sought to utilize this charge by way of vertical wires (aerials if you will) raised by kites from a pair of mountain tops some 18 miles apart. Each kite wire was connected to ground through a galvanometer. Loomis pictured the earth as one conductor of a Leyden jar, and the electrified space or cloud above the earth as the other conductor. He theorized that if the electrified mass above one mountain were discharged directly to ground, it would reduce the charge on the mass above the other mountain, and this result would be made evident by a change in the reading of the galvanometer at the receiving station.

Dr. Loomis tested his theory and apparatus in October 1866 by positioning himself on one mountaintop and by stationing an assistant at the receiving



Dr. Mahlon Loomis, from Radio Theory and Operating by Mary Texanna Loomis, Loomis Publishing Co., 1927

station on the other mountaintop. He established in advance the precise times at which, at the transmitting station, the aerial wire would be grounded, and then ungrounded. In his detailed record of the experiment, Dr. Loomis reported that "three separate and deliberate half-minute connections were made," and that "this deflected or moved the needle (of the galvanometer) at the other station with the same precision as if it had been attached to an ordinary battery." (Sounds like direct current, doesn't it?) Loomis stated that "the experiment had continued for nearly two days before the line would work." (No doubt insufficient cloud cover). But then it continued to transmit signals only about three hours when the circuit became suddenly inoperative by the moving away of the upper electric body.

Very likely, when Dr. Loomis closed his transmitting aerial circuit, and again when (following the half-minute interval) he opened it, a spark would occur (shades of Benjamin Franklin!). Appleby correctly states that these sparks would shock excite the aerial and generate therein an electrical oscillation with attendant radiation from the aerial of electromagnetic wave energy. But that oscillation and radiation would be brief and rapidly decaying - perhaps of microseconds duration, not thirty seconds. The galvanometer at the receiving station could not respond to such transient radiation, but only to the steady-state, half-minute change in potential of the "electrified cloud" above the station.

It follows that no "radio communication" between the stations was involved. Dr. Loomis' galvanometer was not a useful detector of electromagnetic waves, though it was a very sensitive recorder of direct currents.

To the best of this writer's knowledge, the Loomis experiment has never been duplicated to determine, using modern radio frequency and direct current test instruments, just what was being received and measured by Dr. Loomis. This reviewer believes that such a test would demonstrate that, while RF may have been present in Loomis, receiving aerial, any such possible short duration transients would have gone undetected by the galvanometer. Such a corroborative test would be an interesting project for one of our AWA members!

It is interesting that in Orrin Dunlap's book, *Radio's 100 Men Of Science*, 1944, Dr Loomis is listed in Part I, "Pioneers of Electricity," under the heading "Pioneer in Aerial Telegraphy." He is listed there with such other pre-radio pioneers as Benjamin Franklin, Samuel F. B. Morse and Michael Faraday. Not bad company to be in! But Loomis is not listed in Part II, "Pioneers In The Radio Age." With reference to Dr. Loomis, Dunlap makes the point that "although he produced sparks when he touched the kite wire to ground, and that sent out electric waves, he had no means of detecting them."

Commander Appleby makes the point, in Chapter IX, that since Dr. Loomis was "first in this field with a generic invention he had the right to claim his invention in the broadest possible manner without limiting its scope by specifying certain apparatus, circuits or mechanisms." This is quite true, but Dr. Loomis' claim, which he apparently wrote himself, is drawn to cover his invention as he saw and understood it – not as Commander Appleby saw it years later.

In patent law, the claim is intended to define succinctly the "metes and bounds" of the invention, to distinguish the invention from all that went before and to define with precision the scope of the seventeen year monopoly granted by the patent. An examination of Dr. Loomis' claim supports the position that what Dr. Loomis invented was certainly not radio. This is at once evident from the claim's opening lines: "The utilization of natural electricity from elevated points by connecting the opposite polarity of the celestial and terrestrial bodies of electricity at different points by suitable conductors." This immediately rules out radio!

The claim then continues "and for telegrahic purposes, relying upon the disturbance produced in the two electro-opposite bodies (of the earth and atmosphere) by an interruption of the continuity of one of the conductors from the electrical body being indicated upon its opposite or corresponding terminus." This describes the Loomis invention rather well, but certainly not "radio." The claim then concludes: "and thus producing a circuit or communication between the two without an artificial battery or the further use of wire or cables to connect the cooperating stations." That is Dr. Loomis' own, carefully considered statement of what he invented. As someone who spent some 40 years in the practice of patent law, we find ourselves in agreement, not with Commander Appleby, but with Mahlon Loomis, the inventor.

In patent law, for there to be infringement, each and every element of the claim must read upon, ie., be precisely descriptive of, the allegedly infringing article. Very clearly, the Loomis claim does not read upon a radio system. Dr. Loomis did indeed invent a novel system for establishing telegraphic communication between two points, but that system was not radio. Supporters of Dr. Loomis appear to rely on his

(continued on page 64)

AMATEUR RADIO

By Bruce Kelley, W2ICE
59 Main Street, Bloomfield, NY 14469
Please include SASE for reply.

Old-Time CW Contest

A Memorial to Linc Cundall, W2LC

The annual OT CW Contest is a once-a-year opportunity to contact fellow members on popular CW bands. One need not be a high-speed artist since many participants operate at a casual speed of 12 words per minute. A fair percentage use Kenwood, ICOM, and other modern transceivers, although one is encouraged to use vintage equipment. When using modern equipment, please keep input down since some vintage receivers cannot cope with S9++ signals in heavy QRM. To simplify scoring, write for a contest log sheet from Mike Raide, W2ZE, or Bruce Kelley, W2ICE, 59 Main St., Bloomfield, NY 14469. Photos of contestants' early RX or TX are welcome for possible publication.

Dates and Times — 6 p.m. EST Wed. to 6 p.m. Thu. (Feb 26-27); 6 p.m. EST Sat. to 6 p.m. Sun. (Mar 1-2).

Objective — Contact the greatest number of AWA members. When calling, use "AWA AWA AWA de W2AN," as an example. On contact, exchange year of equipment, such as "TX 36" for a 1936 transmitter and "RX 34" for a 1934 receiver. Send "MOD" for modern (1942 or later) gear.

Rules — A station will be scored only once on each band. Nonmember contacts, and stations not submitting logs, will not count.

Frequencies — 1800-1820, 3580-3600, 7030-7050, and 14060-14070 kHz, QRM. Concentrate 20- and 160-meter contacts on the hour.

Scoring System — QSO Zones: "E" eastern zone, US districts 1, 2, 3, 4, 8, 9 plus VE1, VE2, and VE3; "W" western zone, US districts 5, 6, 7, 0 plus VE4, VE5, VE6, and VE7. "DX" zone: All others.

QSO Points per Contact, by Zone:

"E" to "E" or "W" to "W":	1 point
"E" to "W" or "W" to "E":	2 points
"E," "W" or "DX" to "DX":	3 points

Equipment Multipliers:

MOD TX and RX	1
OT TX or RX	2
OT TX and RX	3

Power Multipliers (input to final):

Note Change

0-4.9 watts	4
5-24.9 watts	3
25-100 watts	2
100+ watts	1

Determining Total Points per QSO:

1. Find QSO points for the contact.
2. QSO points × your equipment multiplier × your power multiplier = Total points for the contact.

Scoring Examples:

1. W2AN contacts W2LV —
   - Both are in "E" zone for one QSO pt.
   - Both have OT TX and RX for a 3 multiplier.
   - Both are operating at 20 watts, for a 3 multiplier.
   - Therefore, 1 pt. × 3 × 3 = 9 pts. for contact.

Early Results 1929 QSO Party

Little can be reported in time for closing date of this issue. It was fortunate that two week-ends were scheduled since most activity ceased after 7 p.m. (East coast) with the exception of a few coast-to-coast contacts in late evening. Several stations were worked using MOPA's and 3-watt QRP rigs, and there were some very strange-sounding signals. Be sure to send in all contest log sheets.—BK

2. W2BJI contacts W7BCT —
   - "E" to "W" zone contact, for 2 QSO pts.
   - W2BJI — OT TX and RX with 20 watts.
   - W7BCT — OT RX; MOD TX at 120 watts.
   - W2BJI's points — 2 points × 3 × 3 = 18 pts.
   - W7BCT's points — 2 pts. × 2 × 2 = 8 pts.

3. W2AAU contacts W2AN —
   - Both are in "E" zone, for 1 QSO pt.
   - W2AAU uses MOD TX and RX for an equipment multiplier of 1; is operating at 120 watts for a power multiplier of 2
   - W2AAU's points — 1 × 1 × 2 = 2 pts.

Log Sheets: Sheets will be sent to previous entrants. First time entrant should write for log sheets. Send logs by April 1 to: Mike Raide, W2ZE, PO Box 181, Bloomfield, NY 14443.

Report onThe W1BCG Special Event Operation

by Don Hudson, KA1TZR

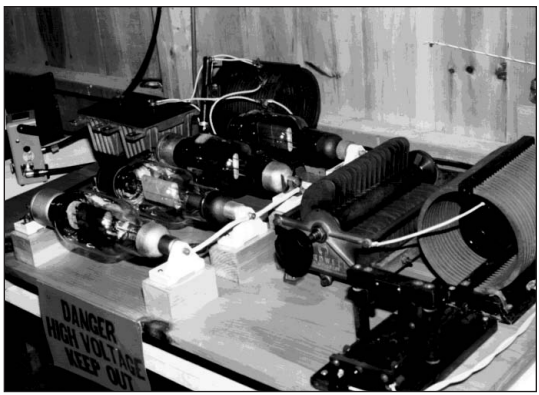
The adventure began at 5:00 PM EST (2200 UTC), on Monday, December 9 1996. With Tim Walker (N2GIG) operating on CW, W1BCG special event station took to the air from Greenwich, Connecticut. Transmitting around 1.812 megacycles, this event was commemorating the first transatlantic short wave message of December 11, 1921. The original station, 1BCG, was built and operated by The Radio Club of America.

As noted in an earlier article (November, 1966 OTB), the organizers of this year's event, with the support of the ARRL, were the Antique Wireless Association (AWA), the Greater Norwalk Amateur Radio Club, the Shoreline Amateur Radio Club and the Stamford Amateur Radio Club. The Shoreline club "loaned" its club call, W1BCG, to the special events station. The replica of the original transmitter was constructed by Bob Raide (W2ZM) and his son, Mike (W2ZE), both of whom made a special trip from upstate New York on December 7 to test the station. Note that Mike's call was formerly held by Paul Godley, the official representative of the ARRL, who received and acknowledged the historic transmission in Scotland. The special event station site and shack were provided by George Wells (KA1JUV), who lives near the original 1BCG location in Greenwich. The on-site installation was by the Norwalk club with George's assistance.

And it was a site to behold! First, there was the 75 foot gamma matching element constructed by Tim Walker. Then, there was George's 80 foot tower with an array of beams that served as the radiating element. Next, after hanging the gamma matching element from the tower, Tim and Rich Roznoy (K1OF) deployed 40 ground radials, each 125 feet of #16 wire. Yes, that is nearly a mile of wire! The transmitter was fed into this system through a 75 ohm coax, a transmatch at the base of the tower, and the usual gamma matching condenser. The power supply, which provided a holiday season glow of its own, featured two venerable, but sturdy, Taylor 866's supplied by Bob Raide, and enabled the station to put out approximately 300-400 watts. The receiver, which was operated at or near the transmission frequency, was a modern solid state transceiver, essential to defend the operator on pile ups.

The station was operated by the Norwalk club with many guest operators from other clubs, including Al Brogdon (K3KMO), who came down from ARRL headquarters in Newington, Connecticut. Starting Friday, December 13, other local stations went on the air for the weekend on the 10, 20, 40, and 80 meter bands. Members of the various clubs operated these special event stations under the W1BCG call from their homes. QSL cards on all contacts will be acknowledged with special event certificates.

(continued on page 62)



1BCG replica transmitter constructed by Bob and Mike Raide.

EDITED BY
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1545 Raymond, Glendale, CA 91201
Please include SASE for reply.

Amplion's Activities in America

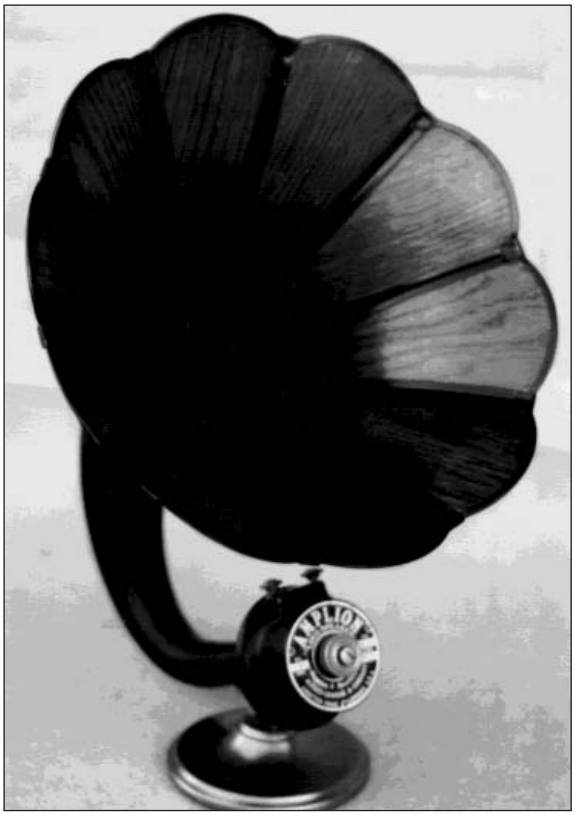
In the March, 1981 issue of The Old Timer's Bulletin, an article on The Amplion Horn Speaker appeared which had a complete listing (some 31 models) of the Amplion product line. Recently, I reviewed a collection of advertisements from contemporary magazines to bring this English company's chronological activities in America to light. The reader should refresh his memory of the 1981 article to make this article more informative.

Radio magazine for November, 1923 carried a full page ad showing that Signal Electric Mfg. Co. of Menominee, Michigan and Burndept of Canada, Ltd. were sole distributors, in their respective countries, of the Amplion horn speaker. A full page *Radio News* ad for Amplion in November, 1924 highlighted two products: (1) the Amplion Dragon, model AR-19 horn and (2) the Amplion phonograph unit, model AR-35 driver. The ad made note of a floating diaphragm in the driving unit. It described the diaphragm as solid instead of perforated, cushioned by rubber gaskets on a narrow ledge and lightly held there.

A January, 1925 ad in *Radio News* gave details of several models available: (1) the new "Dragon" model AR-19, with mahogany finished bell, 20½" high, weighted and hinged nickel-plated base, priced at $42.50 (2) "Junior DeLuxe," AR-114, at $27.50 (3) "Junior," AR-111, at $24.00 (4) phonograph units at $19 and $25, and (5) "Dragonfly," AR-102, at $13.50. *Radio Retailer and Jobber (RR&J)* for Feb. 1925 had the following news item:

Amplion Corporation Expands

The Amplion Corporation of America (ACA) was organized in August of 1924 with the main office at 280 Madison Ave., New York City ..... and have established a manufacturing and



Model AR-19 from author's collection has oak petals, metal separators.

Model AR-19 from Alan Douglas collection has mahogany petals, wooden separators.

assembling department at 52 Warren St. in the same city . ..... The manufacturing is run by A. W. Harris, engineer from the English factory, where Amplions are produced by Alfred Graham & Company, London, England. .....will be in production in the United States of certain models of Amplions.

By September of 1925, a news item in *RR&J* noted that ACA had moved its executive offices to another floor at 280 Madison and enlarged them. Management announced that ACA now has an assembling factory on this side of the water. The United States plant will concentrate on M.U. (manufacturers' units) exclusively. Management said, "...the guts of the unit are made in England and will always be made in England." However, it was stated that some items such as the case, phone cords and rubber parts will be acquired and assembled "right here in America."

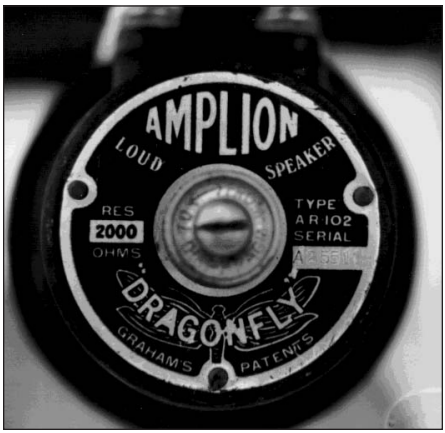
A May, 1926 *RR&J* announcement noted that the Radiolux-Amplion cabinet speaker has been added to the line. Management of ACA claimed the new horn cabinet speaker was louder than the customary "trumpet" types of speakers. The article spoke of a threaded bushing holding the driver unit. (The author calls this type of driver a "quick thread" unit)

An announcement in *RR&J* for June, 1926 noted that ACA was going into mass production at its plant at 437 llth Ave, New York City. Certain English-made parts would continue to go into the units. It was noted that ACA, Ltd. of Toronto, Canada had been organized a few months before and would be associated with the parent concern, Alfred Graham & Co., London. Other associated companies were located in Brussels, Belgium; Paris, France, and (Amplion Ltd.) Sydney, Australia.

An *RR&J* announcement in September, 1926 stated that a new air column horn speaker, called the "Patrician," was being readied for distribution. The management of ACA called this an attractive piece of furniture and an advancement in horn design, noting that the cabinet was open on all four sides of the case. An announcement of a cabinet-mounted cone speaker utilizing an air column was also made.

An October, 1926 news release on the "Patrician" noted that the speaker was a non-directional reproducer in an art cabinet, having dimensions of 18 × 12 × 9 inches, with a 48-inch air column. The cabinet was of carved mahogany and the unit had an intended retail price of $45.

In September, 1927, a *Radio Retailing* news article noted that the Amplion Corporation had moved its offices to 531 West 37th St., New York City, and enlarged its the sales staff. But



Nameplate from Model AR-102 "Dragonfly."

there was bad news the following year. In October, 1928, *RR&J* announced that ACA had recently offered 20 cents on the dollar to creditors, whose aggregate claims ran into several hundred thousand dollars. Graham-Amplion, Ltd., of London, England, had agreed not to press its own six-figure claim until the exactions of other creditors in the United States were satisfied.

Reginald A. Fessenden and the Development of Radiotelephony

By James P. Rybak

Part II: The First Broadcast

Reginald Fessenden had succeeded in providing the Weather Bureau with a very much improved wireless telegraphy system. When his supervisor demanded that Fessenden share with him the patent rights to this system, he refused. Not surprisingly, Fessenden then was fired by the Weather Bureau (in August of 1902).

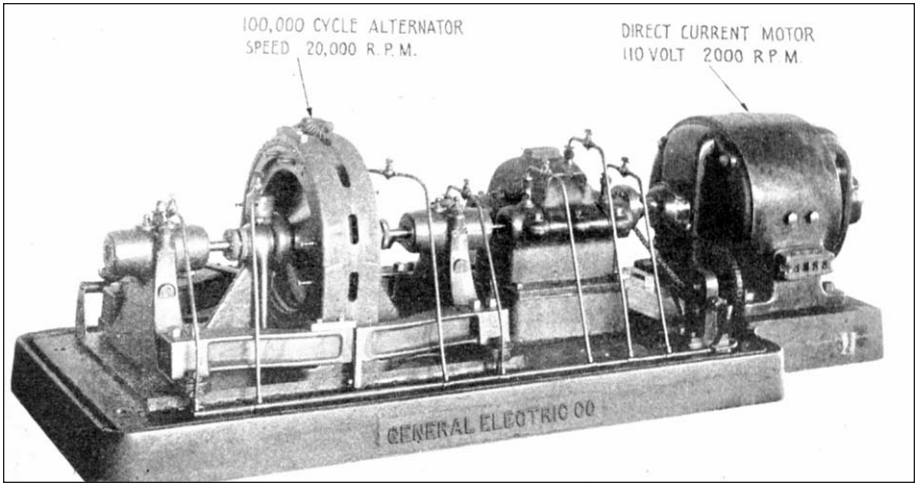
Soon afterward, two wealthy men from Pittsburgh provided the money needed to form the National Electric Signaling Company (NESCO) for the purpose of further developing and marketing Fessenden's wireless telegraphy and hoped-for wireless telephony systems. Fessenden still was convinced that undamped continuous waves were needed for both of these types of wireless systems.

General Electric delivered an alternator to NESCO in 1903, but its power output and frequency fell far short of what Fessenden wanted. Now GE was asked by Fessenden to design and build an alternator capable of producing 25 kw of power at a frequency of 150 kHz.

Next Fessenden turned his attention to the problem of Morse reception. His liquid barretter was a good continuous detector, but Fessenden knew it could not be used to copy Morse Code transmissions if alternators or any other form of continuous wave generators were used to generate the electromagnetic waves. The reason was that, in the absence of the audio frequency pulse rate of damped high frequency oscillations, there no longer would be anything to produce an audible tone in the Morse operators' headsets. Fessenden, however, had an idea.

Every musician knows that two musical notes nearly equal in frequency combine to produce "beat" frequencies which are the sum and difference to the two original notes. Why not, reasoned Fessenden, use the same principle to make keyed continuous radio frequency signals audible?

He proposed combining or "mixing" a continuous radio frequency signal generated at the receiver with the signal being received. The locally generated signal would differ in frequency by a small amount from the received signal so that an audio frequency beat note would be generated and heard in the Morse operator's headset.



2 kw, 100 kHz Alexanderson alternator of about 1917 (From Practical Wireless Telegraphy, by Elmer E. Bucher).

This is the origin of the "heterodyne" principle which is used in modified form in today's superheterodyne receivers. (The word "heterodyne" was coined by Fessenden from the Greek word "heteros" meaning "different" and the word "dyne" meaning "power.") Unfortunately, in 1902, Fessenden still had no good way to generate continuous waves either for transmitting purposes or for implementing the heterodyne principle at the receiver.

Fessenden and his NESCO partners did not sit idly by while waiting for the alternator to be developed. To win customers for their improved wireless telegraphy system, Fessenden believed that a convincing demonstration was necessary. What he had in mind was to do Marconi one better by demonstrating two-way wireless telegraphy communication across the Atlantic.

Two identical stations, each employing a rotary spark-gap transmitter together with a receiving system which utilized Fessenden's improved detector and a 400-foot high antenna, were set up at Brant Rock, Massachusetts and at Macrihanish, Scotland. On January 10, 1906 successful two-way trans-Atlantic wireless telegraphy communication was achieved. Messages were exchanged between the two stations fairly regularly for several weeks until the onset of summer ionospheric conditions made communication impossible at the frequencies being used.

In the summer of 1906, GE delivered to NESCO its second high frequency alternator. Still, neither the frequency produced nor the power output met the specifications Fessenden had wanted. Fessenden then decided to redesign the alternator himself. Little by little, Fessenden improved the performance of the alternator. Soon, successful wireless telephony transmissions were made from Brant Rock over distances in excess of ten miles. By late fall of that year, Fessenden had succeeded in obtaining a power output of 500 watts at a frequency of 75 kHz from the alternator.

Fessenden knew that another spectacular demonstration was needed to win customers for wireless telephony. He decided to take advantage of the fact that many ships were using his liquid barretter detector receiving system. This included both those systems which NESCO had sold as well as those which competitors had sold in violation of NESCO's and Fessenden's patent rights. The barretter was suitable for the radiotelephony reception.

The ships at sea were advised to listen for a "special" transmission on Christmas Eve. They were not told, however, what kind of message they would be receiving.

On Christmas Eve of 1906, the shipboard radio operators were astonished when they heard not a telegraph message but Fessenden's voice on their receiving equipment. Next they heard phonograph music followed by Fessenden singing "O, Holy Night" while accompanying himself on the violin. He then completed this first wireless telephony broadcast by reading from the Bible, extending Merry Christmas greetings to his listeners, and announcing that another broadcast would be made on New Year's Eve.

Reception reports for the Christmas Eve broadcast were sent to Fessenden from as far away as Norfolk, Virginia. Ships in the West Indies reported reception of the New Year's Eve broadcast.

To Fessenden's disappointment, however, commercial interest in his wireless telephony equipment did not immediately follow. Wireless telegraphy still was considered more reliable for long distance communication. In addition, wireless telegraph messages had the advantage of permitting hand-copied or machine-produced permanent records to be made. No means for recording radiotelephone messages existed at that time.

The use of radio telephone broadcasts for entertainment purposes did not become practical until after World War One. The receiving equipment available in 1906 was too expensive to buy and too complicated to operate to be of interest to the public. By 1920, vacuum tube technology had improved the sensitivity and "user friendliness" of receiving equipment. Tubes were also capable of generating enough continuous wave power at sufficiently high frequencies to become the method of choice for generating commercial broadcast signals.

RECOMMENDED READING

1. Aitken, Hugh G.J., *The Continuous Wave: Technology and American Radio*, Princeton University Press, 1985.
2. Archer, Gleason L., *History of Radio to 1926*, The American Historical Society, 1938.
3. Fessenden, Helen M., *Fessenden - Builder of Tomorrows*, Coward-McCann Inc., 1940.
4. Fessenden, Reginald A., "Wireless Telephony," *Proceedings of the American Institute of Electrical Engineers*, Vol. 27, No. 7, July 1908.
5. Kintner, S.M., "Pittsburgh's Contributions to Radio," *Proceedings of the Institute of Radio Engineers*, Vol. 20, No. 12, December 1932.
6. Norris, Lowell A., "The World's First Radio Program," *Yankee Magazine*, Vol. 29, No. 12, December 1965.
7. Quinby, E.J., "Builder of Tomorrows (Part 1)," *Proceedings of the Radio Club of America*, October 1978.

KEY & TELEGRAPH

EDITED BY

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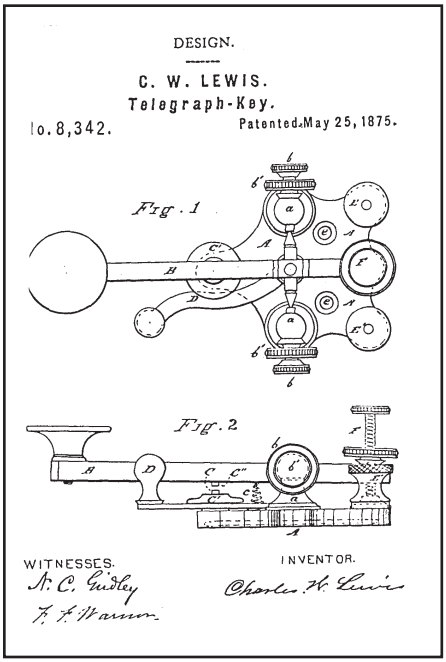
Please include SASE for reply.

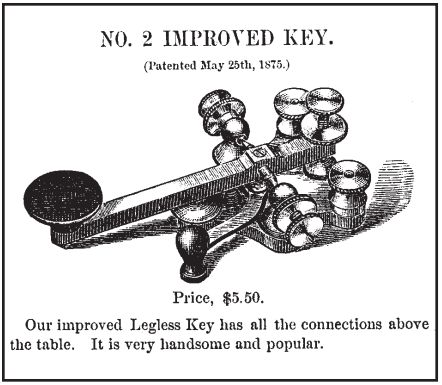
The Lewis Key: A Tasteful and Innovative Arrangement

Mention a "Lewis key" to a collector and immediately an image of a key with a distinctively shaped base comes to mind. A product of Western Electric from 1875 or 1876 to around 1885, these keys turn up just often enough to suggest that they were made in fairly large numbers. Marketed in Western Electric's catalogs of private line instruments as well as in the trade press, the Lewis key enjoyed a certain ubiquitousness. The Northern Pacific Railroad used the key, and another has been spotted in one of the better railroad depot telegraph office restorations in Pennsylvania. (Incidentally, the use of J-38's in such displays makes one wonder if expediency is sometimes the sole criterion for the selection of depot telegraphic artifacts.)



The 1875 design patent drawing.

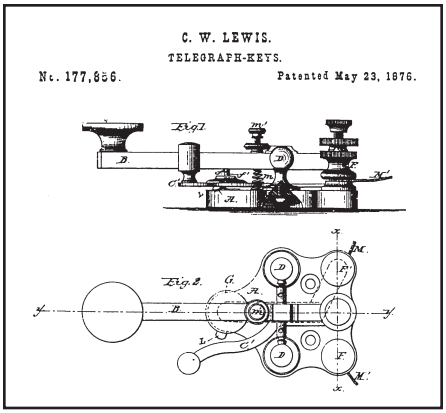
The success of Jesse Bunnell's steel lever key, introduced in the early eighties, probably caused Western Electric to give up on the Lewis. During its comparatively short time in the sun, however, the Lewis patent key was different enough to attract attention. Interestingly, it turns out that there may have been at least six styles of Lewis keys, built around two basic arrangements of lever pivots, but all sharing an identical platform.


NO. 2 IMPROVED KEY.
(Patented May 25th, 1875.)
Price, $5.50.
Our improved Legless Key has all the connections above the table. It is very handsome and popular.

The 1875 design from a Western Electric catalogue of the same year.

Four are shown here, and all bear the Lewis name and patent dates.

On May 25, 1875, Charles W. Lewis of Chicago was awarded Design Patent 8,342. Lewis assigned it to the Western Electric Manufacturing Co. In describing the key, Lewis 'fesses up: "I make no claim to novelty in regard to the construction of any particular parts, nor to the functions they perform, the distinctive feature of my invention being the new and tasteful arrangement and distinctive appearance of the parts as a whole in a telegraph key." "Tasteful" was an adjective not often applied to a telegraph key, and apparently the patent examiner was


C. W. LEWIS.
TELEGRAPH-KEYS.
No. 177,856. Patented May 23, 1876.
Fig. 1.
Fig. 2.

The 1876 patent drawing.

WESTERN ELECTRIC
MAN'F'G CO.,
220 KINZIE STREET,
CHICAGO, ILL.

Patent Legless Key.

All the connections in this Key are on the top of the table. It is not equalled for beauty of design, perfection of finish, and completeness in its parts.
It is convenient and durable.

Western Electric Man'f'g Co.

The 1876 design as advertised in The Operator, December 1, 1876.

duly impressed. Note Lewis' 1875 drawing. No spring adjustment screw/jam nut is provided, but the straight lever's trunnions are supported by conventional screws and jam nuts.

Lewis must have thought about Letters Patent for the key, and a year later he was successful. He claimed in his 1876 application that his goal was " ... to improve the construction of telegraph keys so as to render them less liable to get out of order, and to admit of attaching the binding posts directly to the base of the instrument above the table." Whether or not Lewis was actually the first to offer a "legless" key, this patent seems to be the first so granted. Patent No. 177,856 was awarded to Lewis on May 23, 1876. Curiously, the Design Patent had incorporated base-mounted binding posts, but Lewis made no specific mention of them, and equally puzzling, the trunnion adjusting screws/jam nuts have disappeared. That, according to Lewis, was an improvement because the trunnions were made more secure by fitting them into the lever pedestals, and then tightening the pedestals to the base. A further improvement was claimed with the circuit closing lever's contact under the anvil lip, which is found on all the styles we've seen.

In 1876, Western Electric included "Manufacturing" in its company title, but in 1882 or '83, that word was dropped. It seems reasonable to assume that keys with "M'f'g" in the title were made between 1875 and the early eighties,

(continued on page 55)

SOURCE	NAME ON KEY/ CATALOG NAME	LEVER STYLE	TRUNNION TREATMENT	COMMENT
1875 Design Patent drawing	Unknown No. 2 Improved	Straight brass bar, no spring adjuster	Mid-base, adj. screws / nuts	No known examples
1876 Patent drawing	Unknown Not found	Straight brass bar, w/ spring adjuster	Mid-base, no adj. screws	No known examples
No. 1 in photo	W.E. M'f'g Co. Chicago / No. 1 Legless	Curved brass bar, w/ spring adjuster	Mid-base, no adj. screws	Made 1876-'83
No. 2 in photo	Western Electric Co. Chicago / Not found	Curved brass bar, w/spring adjuster	Mid-base, adj. screws / nuts	Few made 1883-'85?
No. 3 in photo	Western Electric Co. Chicago / Not found	Long curved steel, w/ spring adjuster	End pivot, adj. screws / nuts	One found w/ "M'f'g"
No. 4 in photo	Western Electric Co. Chicago / Lewis Legless	Short curved steel, w/ spring adjuster	End pivot, adj. screws / nuts	Mid-'80's

TELEVISION

EDITED BY

Richard Brewster

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Please include SASE for reply.

Albert Abramson — TV Historian

At last year's Rochester conference, the J.P. Taylor award for TV history preservation was given to Albert Abramson. This was especially appropriate, since his third volume on television history had just recently been published.

Albert was born in Chicago, but was raised and educated in Los Angeles. He served in the Air Force, where he learned his electronics, during WW II, and later studied at the Film School of the University of Southern California. After graduation, he joined CBS and spent the next 35 years as television cameraman, video tape editor, sound man, and almost everything else connected with the technical side of television. Since his retirement in 1987, he has been busy as a consultant while continuing his research and writing.

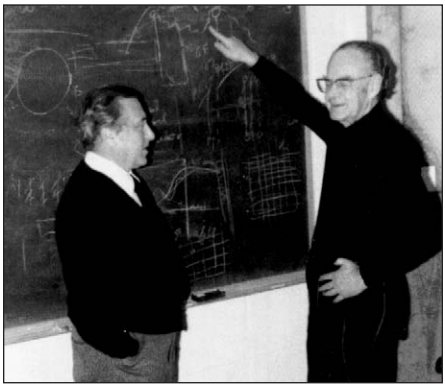
Albert has two US patents, one for 3-dimensional television without glasses (!) and another for a super-high brightness television projector. Negotiations are under way to build a demonstration model of the latter.

Besides consulting for RCA, Ampex, UCLA, LIFE Magazine, and HBO, he served as an expert witness in a Walt Disney suit against the Philadelphia Orchestra. He is presently engaged as a historical consultant for a PBS "American Heritage" documentary on the history of television.

Albert is a life member of the Society of Motion Picture and Television Engineers (SMPTE), where he serves on the Board of Editors as well as the Historical and Archival Committee. He is a member of The British Kinematograph, Sound, and Television Society; the IEEE; Le Comite d'Histore de la Television; the Academy of Television Arts & Sciences, and of course, AWA. He is listed in "Who's Who in America" in 1995/1996.

Al is now completing a trilogy for the SMPTE entitled "A Short History of Television Recording, Part III" that was started in 1954. He is also writing a history of television for college students of Media, Motion Pictures, Communications, and Television. For two years, he was in charge of a joint CBS/USC Television School for minorities. He is often a guest lecturer at various schools and universities.

Over the years he has interviewed literally dozens of television pioneers, preserving "first-person history" which each year becomes less available. Al details a few of his personal experiences in the following paragraphs:



Abramson visits Dr. Albert Rose (right) at Princeton.

The first one that I would have to open with would be Harvey Iams. He was the fountainhead of all the information I gathered about Zworykin and his co-workers. He lived near San Diego and I met with him and his wife many times. He was a kind and gracious host and a pleasure to be with. He was the first one to tell me how happy he was that finally someone had come to see him and ask him about his work in television. He worked with Zworykin from 1928 to 1948. He was with him at Westinghouse and later moved to Camden. He helped invent the icono-

scope and was in charge of iconoscope production at Harrison, NJ. He, along with Dr. Rose, invented the orthicon which led to the image orthicon.

Arthur Vance was a kick. The electrical genius. But he would not talk to me unless I had a drink first. He told me of his adventures at both Westinghouse and RCA. He was in charge of the demonstration between Zworykin of RCA and Alexanderson of GE on July 15, 1930. (Electronic vs mechanical tv systems!) Worked on many top secret projects during the war. Designed the power supplies for the electron microscope. A brilliant man who had many tragedies in his life.

Then there is Dr. Zworykin, of course. In the four times I met him, he was a gracious host, but I never got much information out of out interviews. (He was slightly deaf and spoke with a guttural Russian accent.) I got most of my information from his autobiography. But he was a great man. Brilliant, quiet spoken, but always sure of himself. His work was his life. He knew how to surround himself with men who could get the job done. He would never take no for an answer. He was always working 10 to 20 years in the future. (Another Edison) And he was blessed with lots of luck.

Baron Manfred von Ardenne. My trip beyond the Iron Curtain through Check Point Charley was fascinating. I was trailed by a plain clothed man all the time I was in Dresden, East Germany. But von Ardennne was the perfect host. His home (a lovely, old drafty castle on the Elbe River) was beautiful... A charming and gracious man.

Dr. Rose was, of course, a real genius. He knew nothing about the history of television and was fascinated with it. He agreed to write the forward to my "History of Television" for which I am eternally grateful. His invention (with Weimer and Law) of the Image Orthicon guaranteed RCA dominance over the television industry for 20 years (1945 to 1965).

Professor Kenjiro Takayanagi. My trip to Japan was made even better by my interview with the Father of Japanese television. We spoke through an interpreter (a wonderful girl), had lunch together, and just discussed his role in introducing television to Japan.

My visit with Dr. Joseph McGee at the Imperial College in London was an eye opener. He was a rather dour man who did not like Zworykin, said so, and was obviously jealous of him. But he gave me the first clue to the Zworykin story of how the kinescope was born. A great pioneer who did much work on the London television system. During the war he worked on infra-red tubes for seeing in the dark. After the war he built the first English orthicon, the C.P.S Emitron.

Dr Zworykin (left) was gracious to Abramson, but didn't provide much information.

Then there are the many interviews with tv pioneers such as Ray Kell, Al Bedford, Arch Brolly, Dr. Otto Schade, and even Dr. George Morton (he clammed up the moment I got there). I must include D.C. Birkenshaw, T.C.M. Lance, Ray Herbert, and of course, Hans Gerhart Lubszynski in Scotland where he was living on the Isle of Argyle.

Another group worth mentioning was the Ampex team led by Charles Ginsburg. I met Charles in Redwood City at the Ampex Company many times and talked over the invention of the Ampex (rotating head video) tape machine. I also had interviews with every member of his team; Fred Pfost, Alex Maxie, Charles Anderson, Shelby Henderson, and Walter Selsted (who hired Charles Ginsburg). However, the greatest thrill was interviewing Dr. Ray Dolby at his factory in San Francisco where we spent a delightful afternoon discussing his role in the invention of the Ampex recorder. (He was much too modest about what he had done.) He showed me through his marvelous factory where all those fabulous Dolby products are made. A real genius.

These and numerous other interviews together with years of research have resulted in more than a dozen articles and three books; *Electronic Motion Pictures*, *The History of Television: 1880-1941* and *Zworykin, Pioneer of Television*. The Zworykin book is presently available from the University of Illinois Press. We look forward to Albert's next book, which will continue the history of television from 1941.

TRANSISTOR TOPICS

EDITED BY

Norman Smith

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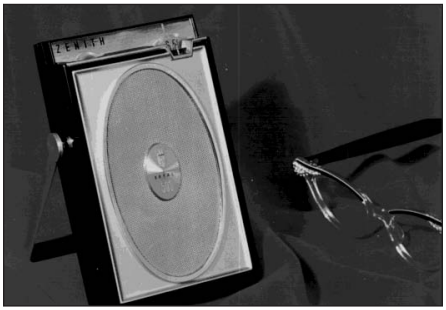
Please include SASE for reply.

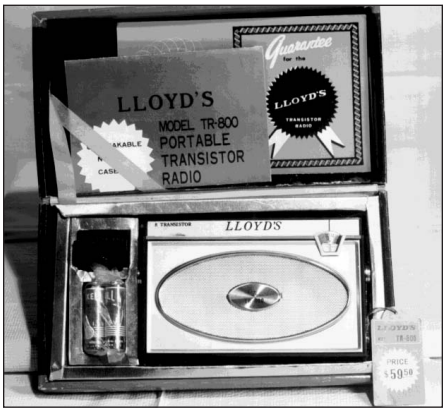
The Lloyd's Model TR-800

One of the most copied of all transistor radios was the famous Zenith Royal 500. Because this model set the performance standards by which most other transistor sets were compared, it was not long before many design variations appeared. The variety of "Royal 500 concept" radios varies from almost identical clones to sets which merely copied key features.

One of the more interesting clones is the Lloyd's model TR-800. It appeared on the market in 1963, just after Zenith had redesigned the Royal 500 to become the Royal 50OH. The Lloyd's knockoff was oriented horizontally instead of vertically, but it was an obvious copy of the Zenith design. The Japanese clone is nearly the same size as the Zenith and, like it, employs eight transistors.



The Zenith Royal 500H set performance standards for the transistor radio industry.



The Lloyd's TR-800, an obvious Royal 500H knockoff, performed well but was no Zenith!

The performance is quite good for a Japanese set, but falls far short of its Zenith counterpart. Behind the large oval speaker grille of the Lloyd's, there is a 3 inch round speaker, with the extra space filled by a cardboard panel. Although the handle-stand assembly looks almost identical, it is made from thin metal which is weak and very easily bent.

The horizontal bar which accents the control knobs is made of plastic, in contrast to the die cast assembly used on the Zenith. However, the styling looks almost identical, including the knob design and script. The Lloyd's TR-800 is one of the very few Japanese sets to utilize Nylon for its cabinet material, another feature copied from the Zenith set. The script on the back is very similar to that used on the Royal 50OH, also proclaiming "Unbreakable Nylon." However it does also admit that the set is "Made in Japan." The venting in the back closely resembles that on the Zenith, and even the screws and hardware associated with the back look amazingly similar.

The Lloyd's TR-800 retailed at $59.50, exactly 45 cents less than the Zenith. However, these sets were sold for far less than the price shown on the factory tag—attempting to give the impression that this radio was a real bargain. The TR-800 was sold in drug and discount stores. This set is quite rare and may be found with marketing names other than "Lloyd's." It was a common practice for the same radio to be imported under many different names.

A Lloyd's TR-800 would be a great find for any Royal 500 collector because it was such an obvious effort to duplicate the Zenith product.

One-Tube Transmitter from the 1940's

by Randy Haus, KB2PLW

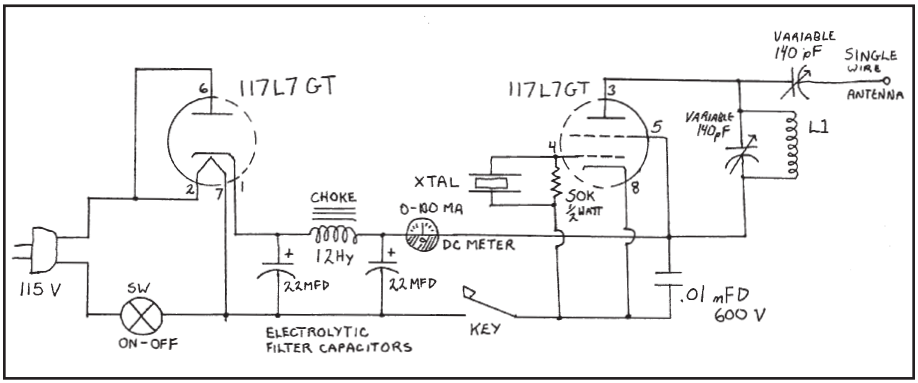
One of my favorite pastimes is reading *QST* magazines from the thirties and forties. Everything about them is neat, from the way they smell to the easily-understood articles. Much of the week after each fall conference is spent poring over my latest "catches" looking for the coming winter's homebrew projects.

Randy's 1940s one-tuber occupies a place of honor in his shack, directly over the TR-4.

This particular project was inspired by an article in the January, 1941 *QST* entitled *Pocket Size Complete Transmitters*[1]. The two transmitters described in the article were built around the 117L7 tube. This tube contains a half-wave rectifier and a beam-power amplifier in the same glass envelope, and the filament is supplied directly from 115-volt house current. I decided to build a hybrid of the two transmitters, combining the well-filtered power supply of one with the simple oscillator section of the other.

A few words about safety are in order here. This is an AC-DC circuit having live 115-volt house current present on various parts of the wiring. The safest way to build this rig is on a varnished wood breadboard with the wiring well away from the cabinet or other parts that the operator can come in contact with. A protected or phenolic arm key such as the British key, Wireless Telegraph 8 AMP No. 2[2] prevents easy contact with the metal key parts. As an added safety measure, an isolation transformer can be used between the transmitter and the electrical socket.

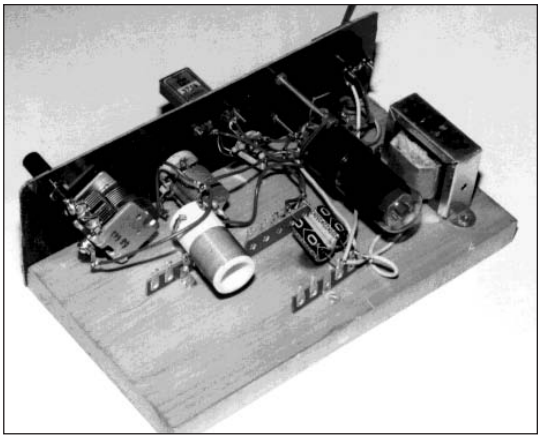
Aside from its size and ease of construction,



Simple circuit goes together with a minimum of fuss. Coil L1 is wound of #24 wire on ¾" form. 80 meters: 30-40 turns; 40-meters: 25 turns.

there is another virtue in this rig — its ability to work with almost any single wire antenna. The transmitter will even load up on several window screens hooked together, although my best antenna yet is the Radio Shack shortwave antenna kit, about 60 feet long and 16 feet high. With this setup I worked ten stations in the first week of operation.

Operating the little rig is a snap. With a crystal installed, let the set warm up for a good five minutes. Key the rig and *quickly* tune for lowest plate current. Adjust the series antenna capacitor for the best antenna coupling, periodically readjusting the tank capacitor for lowest plate current. To determine optimum tuning, I use a homemade field strength meter as described below. Fully tuned and loaded, the transmitter puts out three to four watts.

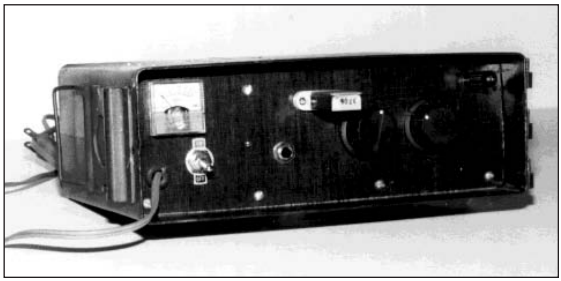


The simple circuit is neatly laid out on a varnished breadboard.

As you can see from the photographs, my version is built into a surplus ammo box for ease of transport and a quasi-military look. I use CW crystals, available from Bob Woods, W0LPS, for a clean signal. Many thanks to Bruce Kelley for the 117L7 tube.

Many old time rigs feed directly into single wire antennas of various sorts, making insertion of an SWR meter impractical if not downright impossible. To get around this, I "stole" an idea from the old timers among us; I simply ignore SWR and tune for maximum current in the antenna. To do this, I loosely couple a field strength meter to the antenna and tune for maximum signal strength. The FSM I use is based on a 50-year-old design[3]. It consists simply of two 1N34 diodes connected in "series" (anode to cathode) across a 0-1 milliammeter, observing proper polarity. The "probe" consists of 4-5 feet of insulated wire connected at one end to the junction of the two diodes.

I couple the last eight inches of the probe loosely to the antenna by placing it parallel to and six inches away from the antenna. I then tune for maximum deflection of the milliammeter. Crude, but very effective.



Ammo-box cabinet gives the rig a "quasi military" look.

REFERENCES

1 Keith Hayes W9ZDG and R.T. Lawrence W8LCO, *Pocket size Complete Transmitters*, *QST* magazine, January, 1941, pp. 12-14

2 Louis Meulstee PA0PCR, *Unusual Military Morse Keys*, *The AWA Review*, Vol. 8, Ludwell Sibley KB2EVN ed (1993) p. 93

3 Emerson Hoyt WX7E, *An R.F. Sniffer Meter*, *QST* magazine, April, 1994 p. 82

As Randy has stressed in his article, various parts of this circuit are connected directly to the house wiring and, as such, constitute a significant safety hazard. Even though the "hot" portions of the wiring may be isolated from the cabinet or front panel of the set, it should be noted that the key contacts are wired in one side of the line. Randy seems to have gotten around this problem by using a rare insulated and enclosed key. But if you want to use your J-38 or other key with exposed metal parts, the use of a line isolation transformer is a must. — Ed.

Revisiting the Hallicrafters HT-6

— *A Search and Rescue Mission* —

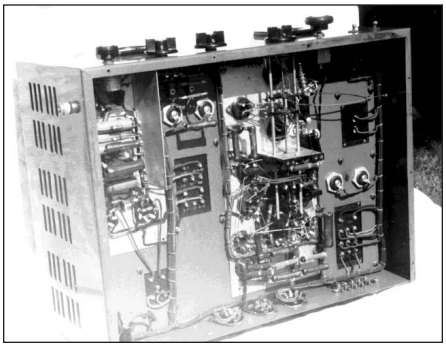
By Bob Haworth, W2PUA

How many of you have had this experience? Something or someone encountered in your adolescent years impressed you so strongly that you have a desire to acquire the article, or renew the friendship, later in your life. I place those feelings in the broad category of "longing" and suspect most people have these memory flashbacks.

My chief longing manifested itself as a desire to acquire and operate (again) one of Hallicrafters' better known transmitters of the pre-WW II era. This article concerns itself with satisfaction of this particular urge and the pleasure of doing the required restoration.

First, some background. The Hallicrafters Company of Chicago, caught up in the new-

Restored HT-6 just prior to installation in cabinet.



Wiring harness makes things quite uncluttered below-decks.

product development and marketing race that existed prior to WW II, was announcing new products on almost a weekly basis. The HT-6 transmitter was one of these products. It was an instant success, with production releases occurring monthly.

The HT-6 is a table-top rig of delivering 24 watts output on AM phone or CW, and is in the heavyweight class at 65 pounds. It was constructed in the traditional Hallicrafters manner of heavy-gauge steel (0.045") and used high-grade components from such vendors as Stancor, E. F. Johnson, Amphenol, Utah, and IRC.

My first experience with the venerable rig occurred as a lad (or maybe young man) of 15. The year was 1940, when a school chum sparked my interest in radio by inviting me to his house after school to see whom we could "work" on his radio station. Being inquisitive, I took him up on the invitation and was soon shown a 4' × 8' table with a Sky Champion receiver and an HT-6 transmitter.

Little did I realize that my school chum didn't have a license, and that our "contacts" were provided by a high-frequency buzzer under the table, while the key banged away on top. Yes, I was "hoodwinked" by my pal, but was captivated by the majesty of the radio setup and the concept of wireless.

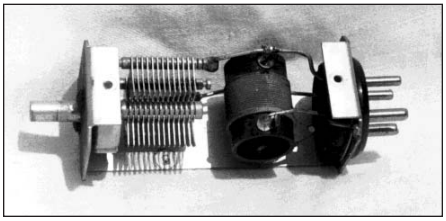
Shortly thereafter my hoodwinking chum, Hank Bennett, W2PNA, and I worked diligently to obtain our amateur licenses, tuning up the HT-6 into a dummy load and practicing code by the hour on that "work the world" buzzer. The sheer beauty and the seemingly perfect proportions of size, weight and appearance of the HT-6 left an indelible stamp on my memory and a subconscious longing to own one.

For those not familiar with the HT-6, the tube lineup is a 6L6 oscillator (either crystal or ECO) feeding an 807 final. The modulator is P-P 6L6Gs driven by a two-stage speech amplifier. Bandswitching is provided. Three bands may be set up independently by tuning plug-in coils.

The HT-6 could have never been born in these days of consumer-product safety, since to tune these circuits the operator must lift the lid and reach in — placing his arm dangerously close to the 450-V plate supply and tuning capacitor for the 807. I haven't heard of an accident of this type, so maybe the operators of yesteryear were "super-aware." Most rigs in those days had shock hazards.

Many years have gone by since that first

Chassis and components look factory-fresh thanks to careful repaint job.



Oscillator tuning unit with control knob and cover removed.

encounter. There was a war to fight, a college education to obtain, a family to raise, and the day-to-day problem-solving familiar to all. Lately, however, with most of these responsibilities solved, I developed a desire to revisit those things of my youth that gave pleasure (besides young ladies, of course). Thus the yearning to again see, own and operate an HT-6. But first, to find one!

After fruitless leads and countless hamfest visits, I ran into a stroke of luck on mentioning my desire to West Coast friend Sam Thompson, W6HDU. Sam stated that one of the SPAM Net members, Howard Mills, W3HM, might have one or maybe even two units around his shack. Before the sun set I fired off a letter to Howard, only to be told that he didn't own them, but was holding them for Gil Geoffrion, N4QAS. Gil operates "Skypoint Ham Center" and specializes in all forms of new and antique rigs.

The result was a phone call to Gil, during which he agreed to sell me two rigs, one good and one for parts if needed.The search was over, with a trip to W3HM's location near Harper's Ferry, Virginia, to retrieve both units. Howard was most gracious. After touring his shack and inspecting more 1-kW rigs and super receivers than I have ever seen in one place, I headed for home with two "copies" of my lifetime desire in hand. A review of the units revealed that both were restorable: all transformers showed continuity, all sockets, knobs, meters, etc., were present and accounted for. So on to restoration I went.

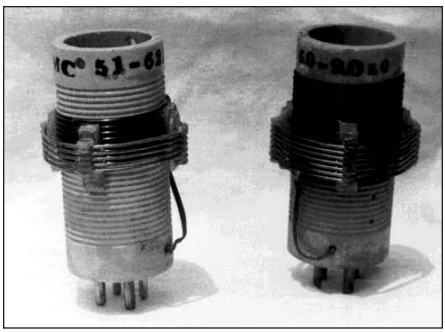
Since the HT-6 has separate plug-in oscillator assemblies for each band, as well as separate final plug-ins (except for the old 5-meter band at 56 MHz), I made a quick count and found one complete set of oscillator units and zero final units. The quest for the final tank circuits would have to begin after electrical/mechanical restoration was complete. If worst came to worst, some design time might be required to reconstruct the missing units.

During the birth of the HT-6 Bill Halligan stated that it must be designed to retail for less than $100 (Old Dollars). The engineers tried hard, finally conceding that the only way to meet the figure would be to retail the HT-6 without oscillator tuning units and final coil assemblies. Hence, it was offered that way. Perhaps that explains the multitude of coil configurations I've come across for this rig; amateurs tended to make their own tuning circuits.

Restoration of both rigs was straightforward since, as the pictures show, Hallicrafters used a master wiring harness and point-to-point wiring of components. The bottom view of the HT-6 shows the clean lines and layout. All electrolytics in the rig, as well as the two paper capacitors, were replaced. They weren't necessarily defective, but I felt that such replacement would assure the unit another 50 years of life.

To maintain the original appearance, new capacitors were installed in the original housings. A quick check of all resistors revealed that only two had drifted too far to be usable, while all the mica capacitors were in excellent condition.

(continued on page 61)



Original Hallicrafters final coils for two different bands.

MEET THE COLLECTORS

EDITED BY
Rodney Schrock, KD3OR
402 Lincoln St., Somerset, PA 15501
Please include SASE for reply.

With this issue, Rodney Schrock brings to a close his 15-year incumbency as an OTB *columnist. He began the well known "Meet the Collectors" column in 1981, and since then has published 33 personally-developed articles under its banner. Actually, the column name is a bit misleading. Rod tells me that he became an* OTB *contributing editor primarily show off his own projects! However, Rod's allotted space in the* OTB *has always been open to anyone with an good project to show—particularly one in line with his own interests of scratch-building replica radios.*

Our outgoing columnist likes nothing better than recreating classic broadcast and communications receivers, particularly sets from the 1930s. However, he has never hesitated to stray into other areas—once building a 1960's-era black-and-white AMC television set from the original manufacturer's data sheets (see the OTB *for February, 1991).*

With so many years of service under his belt, it's not surprising that Rod would now like to free up some time to pursue his other interests. I asked him if he planned to rest on his laurels or if we would be seeing more of his work in the OTB. *His answer was encouraging. "Oh, I'll be cooking up some things from time!"— MFE*

The RCA Victor "Camera Radio" Model BP-10

This radio has fascinated me since I saw my first one in 1940 or 1941, when I was in about the fourth grade. The appliance store up the street from my home had one of the little sets and the owner's wife demonstrated it for me.

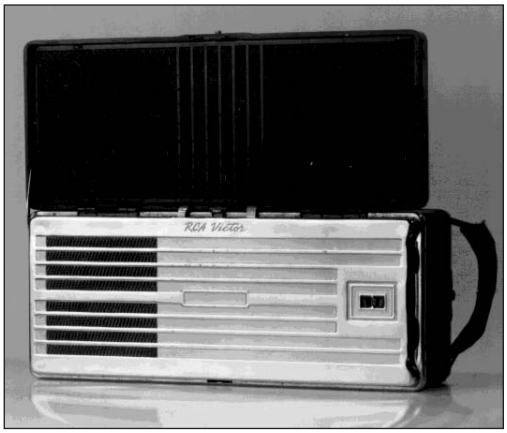
Last September I bought a Model BP-10 at Rochester and decided to try and restore it. First, I tested all the tubes and to my surprise they all were good. Next, I added all filament currents; they totalled .25A. Inserting a 1.5-volt flashlight cell to power the filaments, I measured the current draw. It was .25A and so all of the filaments were lit.

Checking all the set's paper capacitors, I found it necessary to replace all except one. I then built a B battery out of eight 9V units in series, adding a dropping resistor to adjust the voltage to the specified 67½ volts. The assembly was small enough to fit in the allotted storage space.

I turned on the radio and heard nothing but deep silence from the speaker! Using a signal tracer I found that either the speaker or output transformer were defective. Some luck — these components were almost impossible to get to!

With the signal tracer on the output tube plate, the radio passed an IF signal from the antenna. Also, the oscillator was showing signs of life at some unknown frequency. Resoldering the connections on the oscillator coil and working its

(continued on page 65)



Here's the little BP-10 as found at the Rochester meet.

EQUIPMENT RESTORATION

EDITED BY
Ken Owens
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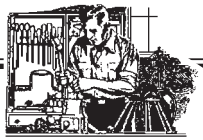
Please include SASE for reply.



REPLACING PHILCO CAPS

by D. K. Owens

When I was servicing radios in the 1940's, I used to mutter all sorts of imprecations against Philco for using non-standard parts - especially those capacitors in Bakelite cases with solder lugs on top and cryptic numbers on the side.

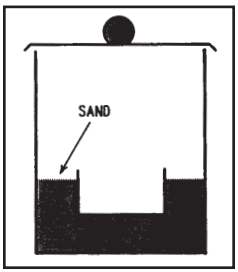
I finally located a chart in Rider Vol. II (1932) showing values and lug connections and made a copy. Back then, "copy" meant handwritten. These capacitors weren't high quality to begin with and often went bad in the 40's. Now, after 50 more years, nearly all have gone bad and need replacing. Since the lugs not only connect to the capacitors inside, but serve as tie points and support for other components, it's good practice to put new capacitors inside the Bakelite cases to maintain the original wiring configuration and support.

I use a sand bath to melt out the old contents. The sketch shows how to make one. You will need a 6"OD × 7"H can such as a 3 lb coffee can, a 3½"OD × 1½"H can such as cat food or tuna fish comes in and some clean, fine sand.

Put a 1" layer of sand in the large can and press the small can onto it hard to get uniform contact. Add another inch of sand around the small can. Tap the outer can to settle the sand into uniform contact. Make a lid out of some sheet metal and attach a wood knob to avoid burning your fingers.

Lay the "block" capacitor in the small can, cover, and heat on the stove or a small hot plate on low heat. The sand bath gives a steady, even heat without hot spots. When the potting begins to soften, but before it starts to run out, remove the unit from the sand bath and pry out the contents with a small screwdriver or nail. If the contents won't come out easily, heat some more. The connecting wires which run through the eyelets to the lugs will break away from the capacitor when you pry it out. Soak the cases in paint thinner (outdoors of course) to dissolve the tar and wax remaining in them. Then remove the old wires from the lugs.

I use modern, radial 600V polyester capacitors to replace the original contents. Being flat, they fit easily into the Bakelite cases. Run the leads through the appropriate eyelets, wrap them around the lugs, and solder. I don't recommend repotting. It's not necessary and you will regret doing it if you ever have to replace the contents again. The Rider chart mentioned above is hard to read. Lud Sibley has made a simplified, easy-to-follow version which appeared in the newsletter of the Northern Indiana Members of the Indiana Historical Radio Society and is reprinted here with permission.



Sand bath for melting out Philco caps (see text).

There are 8 possible lug positions, but a given block may not have them all. Don't worry about weird values like 0.09°µF. Just use the nearest standard value. The wirewound resistors in certain blocks can often be recovered and used again. If not, use 1W carbon film resistors as replacements. They are small enough to fit in with the capacitor.

Philco later developed a "universal" block capacitor which not only replaced the older units, but also had many new values. Philco Bulletin No. 289 (August, 1937) covers these changes. If you would like a copy, send me a SASE plus a loose 32¢ stamp to cover copy costs.

■ ■ ■

The following contribution continues the series by Lane Upton. It may raise some eyebrows, but it's really not as outrageous as it may first appear. The Navy uses a similar procedure to salvage electronic gear which has been immersed in sea water.

WASHING THE RADIO CHASSIS

by Lane Upton (Pine Grove, CA)

The first time I saw an electronic unit being washed with detergent and water was at a Tektronix service center in the 1960s. This was a factory recommended procedure for their oscilloscopes and other instruments. Initially this startled me, but after I 'hosed down' a few radios, I was convinced.

I have used this cleaning method for years without ever causing any electrical problems. It removes most of the heavy layer of oils and grime baked onto the metal surfaces over the years. With this method I have cleaned up some sets which other collectors have rejected because they were too filthy and/or 'smelled'.

I originally used this method for early battery sets, but I have also washed modern radios including a Collins 51J4 which had mice living in it. One of the last sets cleaned this way was a Hallicrafters SX110 which is now playing in my office.

Washing may seem drastic, but it works very well providing a little common sense is used. There certainly is room for experimentation with what detergents to use and what techniques work best for the individual.

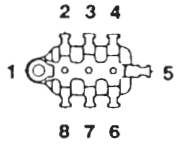
Cautions

• Occasionally the detergent may react with the surface being cleaned. If you have any doubt, try some on a small spot in a hidden area first.

• Another consideration is the chemical com-

PHILCO BYPASS-CONDENSER DATA - TYPICAL UNITS

To remember the lug numbering, think of the block as a tube socket with ground on Pin 1. Units with * next to their letters (e. g. 3615-AF) have dual condensers.



3615- type (0.05 μF)

Letter	Lugs Used	Cond. on	Resistor
B	1, 3, 5	1-5	250 Ω, 3-5
C	1, 5, 7	1-5	250 Ω, 5-7
D	1, 3, 5	1-5	-
E	2, 5	2-5	-
F	2, 3, 5	3-5	-
G	5, 8	5-8	-
H	3, 5, 8	5-8	-
J	1, 5, 7	1-5	-
K	3, 5, 8	5-8	250 Ω, 3-5
L	1, 5	1-5	-
M	2, 5, 7	2-5	-
N	1, 4, 7	1-4	-
P	1, 4, 7	1-4	250 Ω, 4-7
R	1, 5, 7	1-5	250 Ω, 5-7
S	1, 4	1-4	-
T	1, 5, 7	1-5	150 Ω, 1-7
U	1, 5, 7	1-7	-
W	1, 2, 5	1-5	-
X	1, 2, 5, 7	1-5	150 Ω, 1-7
Y	1, 2, 5, 7	1-7	150 Ω, 1-5
AA	1, 3, 5, 8	1-5	-
AB	1, 4, 7, 8	1-4	-
AC	1, 5, 7, 8	1-7	-
AD	3, 5, 8	3-5	-
AE	1, 7, 8	7-8	-
AF*	4, 7, 8	4-8 & 7-8	-
AG	1, 3, 5	1-5	-
AH	1, 5	1-5	-
AJ*	1, 3, 6, 8	1-3 & 1-6	-
AK	1, 5, 7, 8	1-7	-

3793- type (0.015 μF)

Letter	Lugs Used	Cond. on	Resistor
B	5, 7	5-7	-
C	2, 4	2-4	-
D	2, 6	2-6	-
E*	1, 5, 7	1-5 & 1-7	-
F	5, 7, 8	7-8	-
G	2, 3, 6	2-6	-
H*	1, 3, 5	1-3 & 1-5	-
J	2, 5, 7	2-5	-
K*	1, 3, 5, 8	1-3 & 1-5	-
L*	5, 7, 8	7-8 & * & 7-?	-
M*	5, 7, 8	5-8 & 7-8	-

3903- type (0.01 μF)

Letter	Lugs Used	Cond. on	Resistor
F	3, 5	3-5	-
G	2, 4, 7	2-4	-
H	5, 8	5-8	-
J	2, 5, 7	2-5	-
K	1, 2, 4, 7	1-7	-
M	4, 7, 8	4-8	-
N	3, 5, 8	5-8	-
P	2, 5, 7	2-7	-
R	4, 7, 8	4-7	-
S*	1, 5, 7	1-5 & 1-7	-
T	5, 7, 8	7-8	-
U	1, 2, 5, 7	1-7	-
W	2, 4, 7	2-7	-
X	3, 5, 8	3-8	-
Y	3, 5	3-5	-

4989- type (0.09 μF)

Letter	Lugs Used	Cond. on	Resistor
B*	1, 3, 5	1-3 & 1-5	-
C*	1, 5, 7	1-5 & 1-7	-
D	1, 5	1-5	-
E	1, 5, 7	1-5	250 Ω, 5-7
F	1, 5, 7	1-5	-
G*	1, 4, 7	1-4 & 1-7	-
H*	1, 4, 5	1-5 & 4-5	-
J	3, 5	3-5	-
K*	3, 5, ?	3-5, ?	-
L	3, 4, 8	4-8	200 Ω, 3-8
M*	4, 7, 8	4-8 & 7-8	-

Chart for deciphering Philco cap connections (by Lud Sibley).

position of your water. For example, if it contains a high level of iron (rust), maybe you should experiment with a junker chassis first. I have not had any problem with this, but it is a possibility.

Preparation

• In preparing the radio for washing, remove any items that will be damaged by water such as speakers, cardboard and wood assemblies, dials, dial cords, etc. I usually remove the entire dial and drive components, not only to prevent water damage, but to allow better access for cleaning. Also take out all tubes, shields, knobs, and other easily removable items to allow maximum access for cleaning.

• Non-removable paper labels and cardboard items can be protected by taping sheet plastic over them. WD-40 can be used as a water repellent where items cannot be covered, but it may leave a slightly darkened appearance. WD-40 can also be used for protecting volume controls by spraying it into the openings around the terminals.

Washing With Hose

• Use an adjustable nozzle with on/off trigger. Use the hard, concentrated stream for washing off the metal surfaces and the soft spray for delicate items and general rinsing.

• Start by wetting down the unit. I have found that the detergent will not react as harshly and will have better distribution with a wetted surface. Ideally the water should be warm, but I have always used the garden hose with cold water for larger items that won't fit in the laundry sink.

• Brush and wash away all loose materials before using a detergent. Be careful not to direct the high pressure water stream onto paper labels.

• Spray with detergent (I prefer 409 brand) and allow to soak for a minute or so. Try not to get large amounts of detergent inside IF transformers and coils because most detergents are corrosive. Continue to clean with a brush, detergent, and water, until you are satisfied.

• Be sure to thoroughly rinse off all detergent residue. Flow water through the IF cans, coils, tube sockets, and variable condensers to assure that no detergent remains. Then shake and throw off the excess water as best you can.

• Immediately brush and/or wipe away as much of the remaining water as possible. The better job you do of wiping away the water at this stage, the fewer water spots you will have on the finished job.

Washing in the Sink

• Many smaller radios and sub-assemblies can be washed in a sink. This allows you to use warm water for better cleaning and faster drying. Use the sink for tubes, shields, dial parts, etc.

• When washing vacuum tubes, use a mild liquid dish washing soap. Don't scrub off the labeling on the glass — just rub the glass lightly with your hand. Try to get as little water in the base as possible.

• Shake and wipe off the part to get rid of the excess water. Usually the smaller parts can be fairly well dried with a rag or towel.

Drying

• I often use the discharge from a tank type vacuum cleaner to blow away water. The air is somewhat heated and helps the initial drying. The crevice tool can be used to force some air down through the tops of IF transformers and other coils.

• The final drying of the unit depends upon the temperature and humidity. During the winter, place sets in the area around the heater, and in the summer, leave them out in the sun. Be careful with any unit that contains beeswax — be sure you don't get it too hot and cause the wax to run.

• Dry tubes, especially rectifiers, in a warm area for at least 24 hours before using.

Applying Power

• The question of when it is safe to apply power to the radio is difficult to answer. I always wait at least one week before applying any AC power.

• Before applying power, make leakage resistance checks to ground from the power transformer primary. A few resistance checks in other circuits can be compared with the schematic data to see if they agree.

• Initially, I prefer to run AC radios at about 90V line voltage for at least an hour with all tubes except the rectifier installed. Play the set for at least 8 hours before doing the final alignment.

■ ■ ■

The next article originally appeared in the newsletter of the Northern Indiana Members of the Indiana Historical Radio Society.

NEUTRALIZING EARLY RADIOS

By Ross Smith (Elkhart, IN)

Before the introduction of the type 24 tetrode radios typically used several stages of RF amplification ahead of the detector. These were

triodes such as the 01A, 26 or 27. Oscillation by feedback through the grid-plate capacitance of the tube often caused radios to squeal or motorboat. To prevent oscillation, many receivers used a circuit developed by Prof. Hazeltine called the "Neutrodyne" which neutralized the grid-plate capacitance of the tube.

A Philco Model 87 Neutrodyne with 3 Type 26 RF amplifiers exhibited severe squealing and motorboating. Replacement of the bypass and filter capacitors had no effect, so I undertook to neutralize the set with advice from Serge Krauss.

Here is the procedure:

1. Start with the RF stage nearest the detector. Remove the first two RF tubes and disable the third stage by disconnecting a filament lead or by insulating one filament prong of the tube with tape or a straw slipped over it. You can also use a tube with an open filament. *(Ed. If you use an open tube, be sure the broken filament is not shorted to the other elements.)*

2. Turn on the set and connect a signal generator to the plate pin of the preceding RF amplifier through a small disc capacitor. Tune the set and generator to around 1200 kHz and set the generator for high output. Adjust the neutralizing capacitor for minimum output from the speaker. With care, you can usually null the generator signal out completely.

3. Restore stage 3 to operation and disable stage 2 as before. Be sure a good tube is now in stage 3. Connect the generator to the plate of stage 1 and repeat the process above. You will need to reduce the generator output as you go to prevent overloading.

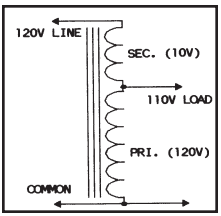
4. After stage 2 is neutralized, restore it to operation and go to stage 1. Here you can feed the signal into the antenna and proceed as before.

After neutralizing and adjusting the alignment trimmers on the main tuning capacitor, the squealing and motorboating disappeared and the set worked very well. The tube manual gives the G-P capacitance of a Type 26 or 01A as 8.1 pF. Because of wiring variations, a fixed neutralizing capacitor of this value cannot be used. An adjustable capacitor is necessary.

■ ■ ■

READER RESPONSE

René Beaudry (Ottawa, Canada) comments on Lane Upton's use of a small transformer to reduce line voltages (*OTB*, Vol. 37, No. 4) and offers this interesting variation.



Autotransformer hookup for reducing line voltage (see text).

He connects the secondary in series with the primary to form an autotransformer as shown in the diagram. Using a transformer with a 10V secondary, he gets the voltages shown. As in Lane's scheme, the load current is carried by the secondary. This arrangement can be fused in the primary because there is no inductive kickback to induce high voltages in case of a short blowing the fuse.

HAPPY ANNIVERSARY IHRS!!

The Indiana Historical Radio Society celebrated its 25th anniversary at the Fall meet in Greenfield, Indiana (October 12th 1996). And we thank Ross Smith for this glimpse of some charter members who attended the festivities. Back row, L to R: Wava Rose Smith and Marilyn Johnson; front row, L to R: Ross Smith himself, Don Johnson, Ed Taylor.

REVIEWS: WHAT'S NEW IN PRINT

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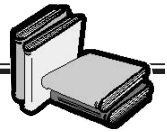

Mahlon Loomis - Inventor Of Radio

By Thomas Appleby, W3AX, Commander USNR, Retired. Published 1967 by Loomis Publications, PO Box 81, Washington, DC 20044, Second Edition 1993. 165 pages. 8½×11 inches. Softcover. Available from the publisher at $25.00 plus $5.00 S&H

Admirers of Mahlon Loomis (1826-1886), an American dentist and experimenter, may be interested to know that Thomas Appleby's 1967 biography, republished several years ago, is again available.

The author, a one-time AWA member, who became a silent key in 1972, provides an interesting and detailed account of Dr. Loomis' life, his thinking, his objectives (telegraphy without wires), the apparatus he used in his many experiments, and his results and hopes.

Included in the book is a copy of Loomis' Patent No. 129,971 of July 30, 1872, which describes in Loomis' own words what he claimed as his invention.

Commander Appleby regards Loomis as the inventor of wireless telegraphy (radio), anticipating the work of Marconi (1896) by several decades. In this we disagree; our views are presented in the article "Mahlon Loomis And His Patent" elsewhere in this issue.

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Sinclair Archeology - The Complete Photo-Guide To Collectable Models

By Enrico Tedeschi. Self-published, 1996. 140 pages. 21×31 cm. Softcover. Available for Ten British Pounds or $17 U.S., plus shipping. Contact the Author at 54 Easthill Drive, Portslade, Brighton, BN41 2FD England.

Enrico Tedeschi, a historian and writer with an interest in electronics, has directed this book to the collectable models of Sir Clive Sinclair, reported to have always been obsessed with miniaturization, and described by the author as "one of the most well known personalities in Great Britain (and in the world) today."

In a Foreword, Tedeschi states that in producing his book he had to consult advertisements from period magazines, books, brochures, and instruction booklets accompanying the original products; he voices the hope that his efforts will turn the curious person into an interested party, and the already interested into a collector, observing that the "Sinclair products were so advanced...and so elegantly designed that they are bound to become collector's pieces."

Sinclair's first product, actually an article describing it, was published in 1958, "The "Micro-Midget" medium wave receiver with three transistors. The dimensions are illegible in the reproduced construction data, but a guess would be 1¼ × ¾ × ⅜ inches. The Sinclair "Micro-6" measured 1⅘ × 1 1/10 × ½ inches and weighed less than 1 oz! His FM, 7 transistor radio measured 2 15/16 × 1⅝ × ¾ inches!

The book is loaded with copies of Sinclair's ads for components, kits and plans for building radios (both AM and FM), preamps, power amplifiers, hi-fi equipment, even a loudspeaker. Then there is a 20-page section on Sinclair pocket calculators, an 18 page section on Sinclair computer kits, a few pages on digital watch kits and a few on digital multimeters. Six pages are directed to Sinclair's miniature TV. One measured 6 × 4 × 1½ inches, with a 2 inch screen.

Finally, for a real change of pace, there's a section on Sinclair's "Electric Vehicles," the C5 Electric Tricycle, "The Zike" electric bicycle, and lastly, the "Zeta" an accessory that would convert an ordinary bicycle into a battery-driven or battery-assisted bike.

• • • • • • • •

Railroad Radio

By Vincent Reh, WA2AUY. Published 1996 by Byron Hill Publishing Co., PO Box 197, Grand Isle VT 05458. 207 pages. 6 by 9 inches. Soft cover. Available from the publisher at $19.95 plus $3.50 S&H.

Here's a book that's tailor-made for enthusiasts of both radio and railroading! And although this reviewer was well aware of the pre-radio

development of induction "wireless" systems proposed for communication with moving trains, he was not aware of their once extensive use, or the fact that induction systems are still in use for signalling and train control on BC Transit's Sky Train in Vancouver, on the Municipal Railway in San Francisco, and on some subways!

But back to radio: read Chapter 2, "Modern Railroad Radio Communication Systems," and Chapter 3, "Radio Operations," to see what railroads are using and doing now. Chapters 4, 5 and 6 on scanners, monitoring and performance revealed to this ham-band follower that "the airwaves are filled with all types of railroad communications" from which one "can gain greater insight into the operational aspects of the railroad industry - much more so than by simply watching trains."

Several "Radio Shack" scanners are illustrated. Appendix A lists frequencies used by over one hundred U.S. and Canadian lines. Echoing one of the book's back-cover blurbs, "Railroad Radio is your ticket to getting 'on-line' with all railroads, big and small."

• • • • • • • •

Wake of the Wirelessman

By B. J. Clemons. Published 1996 by The Glencannon Press, PO Box 341, Palo Alto, CA 94302. 288 pages, 60 illustrations. Soft cover. Available from the publisher at $16.95 including shipping. In California, $18.35 including sales tax.

This book deals with seafaring episodes in the life of Dale Clemons. Born in 1895, the year Marconi sent and received his first wireless signals, Clemons and wireless grew up together. He learned the code at age 9 and became a licensed commercial operator in 1914. That led directly to his joining the West Coast Division of the Marconi Company.

The emphasis is on Clemons' career as wireless operator on steamers engaged in coastwise and overseas trade. In 1916, after two years at sea, Clemons returned to Iowa to fulfill a promise to his father to complete high school and college. However, in 1917, upon the U. S. entry into World War I, Clemons contacted the Marconi Wireless Telegraph Co. of America requesting reinstatement and assignment to the war zone.

The answer, "Come at once," brought him to New York City in May 1917, where he found ship captains walking the streets in search of brass pounders. Marconi's Marine Office Manager assigned him to the freighter S.S. Vigo, an armed merchant steamer with sails rigged fore and aft like a schooner. It looked more like a yacht than a freighter.

Clemons was introduced to his radio shack, and wartime rules, by an officer of the U. S. Navy, then in charge of all radio operations. Strict orders were to listen, report all messages received to the Captain, and to maintain absolute radio silence even on receiving an SOS. No transmissions were permitted unless the Vigo itself were in danger of sinking. Transmitter testing was permitted only with a dummy antenna.

Across the Atlantic, through Gibraltar, into the Mediterranean, on to Genoa, and back to port in the U.S.A., the Vigo dodged attacks, only to find that her most intractable enemy lay within her aging hull. The exciting story is reinforced by the inclusion of many passages quoted directly from Clemons' diary.

The author of the book is Clemons' daughter, Bette. Her "Acknowledgements" reveal that she spent a decade preparing for and writing the book. Among those who aided her in her understanding of the subject were AWA members Jim Kreuzer, Bob Merriam and Bruce Kelley, the latter being "kind enough to critique and fine-tune an early draft of the manuscript." The magnitude of her own effort is suggested by her appended bibliography totalling 65 titles.

MYSTERY PHOTO ANSWERS — *November Mystery Photo*

Phil Weingarten (Forest Hills, NY), who supplied the November Mystery Photo tells us…

…Ralph Batcher was a good friend of AWA. Some of the old timers might recognize him, as a young man, instructing at the old Marconi Institute (later to become RCA Institutes).

Alan Douglas (Pocasset, MA), responding to Ernie Hite's letter about the May Mystery Photo (p. 32, November issue) writes…

…well there's no doubt that Ernie's set is a Receptrad now, and that this photo was taken in 1981. Am I remembering another of John's sets that looked like an automotive dashboard, or was the 1975 set rebuilt from Magnaformer to Receptrad IFs during its restoration? I think so, and that it was the same radio exhibited at both meets.

Recent Radio, TV and Entertainer Obituaries

Compiled by Charles S. Griffen W1GYR
1225 New Britain Ave., West Hartford, CT 06110-2405

Note: When known, the date of death is indicated in parenthesis.

MOREY AMSTERDAM, 87, (10-28-96) comedy writer, musician and comedian. He began his career in vaudeville in the 1920s and later performed in films, radio, television and the cabaret circuit. During the 1930s, he wrote for network radio and was a screen writer at MGM. He is probably best remembered for his role as the wisecracking Buddy Sorrell on the *Dick Van Dyke Show*. The show ran from 1961 to 1966. He worked as a stand-up comic until the time of his death.

TED BESSELL, 57, (10-6-96) TV actor, producer and director. He starred as Marlo Thomas' boyfriend in the television comedy series *That Girl*, which aired on ABC from 1966 to 1971. He also appeared in 30 TV productions including *Gomer Pyle, U.S.M.C*; *Breaking Up is Hard to Do* and *Don't Drink the Water*. He was the director of the Tracey Ullman Show (1987-1990) and director and producer of the 1991 series pilot, *Sibs*.

SEYMOUR R. CRAY, 71, (11-5-96) computer industry pioneer and the father of the supercomputer. He began his career at Control Data Corp. in the late 1950s, where he developed one of the first computers to use transistors instead of vacuum tubes. He also invented Reduced Instruction Set Computing (RISC), a technology that allows desktop computers to process tasks more quickly. In 1972 he left Control Data Corp. and founded Cray Research Inc. Four years later the firm made available the Cray 1 supercomputer. It was 10 times faster and more powerful than any machine on the market.

RALPH GABBARD, 50, (9-9-96) President of Gray Communications Systems and Chairman of the CBS Affiliates Advisory Board. His 30-year career in broadcasting began at WEKY(AM) Richmond, KY while he was a high school student. By 1970 he had moved to television at WKYT(TV) Lexington, KY and eventually was named its President and General Manager. Gabbard was named President of the station's parent, Gray Communications, in 1994.

PAUL E. HARRIS, 86, actor. He was frequently heard on the early radio broadcasts of the Lone Ranger in the role of the bad guy. He acted in other radio and stage shows, but retired as Corporate Secretary of the Berlitz Schools of Language.

ALBERT G. HILL, 86, (10-21-96) professor emeritus at the Massachusetts Institute of Technology helped develop radar in WWII. He joined the staff of MIT's Radiation Laboratory in 1941. The Laboratory was working on radar for military use. He headed the radio frequency group in the Laboratory's transmitter components division and was named chief of the unit by the end of the war. In 1949 he was appointed Director of the Radiation Laboratory. In the 1950's Hill directed the M.I.T. Lincoln Laboratory. He retired in 1978 as director of the Plasma Fusion Center. Until 1982, he was also the founding Chairman of the Charles Stark Draper Laboratory, which developed the gyroscope and the inertial guidance system that steered Apollo 11 to the Moon in 1969.

ANNE HUMMERT, 91, (7-5-96) creator of radio soap operas. She and her husband created such radio classics as *Just Plain Bill*; *Young Widow Brown*; *Mr. Keen*, *Tracer of Lost Persons*, and *John's Other Wife*. At one point they had eighteen 15-minute serials on the air for a total of 90 episodes each week. Their success lead to the formation of Hummert Productions.

DOROTHY LAMOUR, 81, (9-22-96) actress. She appeared in 60 films of which six featured her with Bob Hope and Bing Crosby in the "Road" series — *The Road to Zanzibar* (1941), *The Road to Morocco* (1942), *The Road to Utopia* (1945), etc. Among her more serious films were the 1940 crime melodrama *Johnny Apollo* and the 1945 film *A Medal for Benny*. She also did guest appearances on such TV shows as *The Love Boat*, *Murder, She Wrote* and Bob Hope specials.

LAURA La PLANTE, 92, (10-14-96) actress. She appeared in some 75 films, many in the silent era, often as a comedian. La Plante was the first woman to be heard singing and sobbing on screen in the original film version of *Show Boat*, in 1929. Perhaps she is best remembered

for her role as the heroine in the 1927 silent film, *The Cat and the Canary*.

T. VINCENT LEARSON, 84, (11-4-96) former Chairman of International Business Machines. He joined the firm in 1935 and became Chairman and Chief Executive for two years starting in 1971. During the 1960's he is credited with convincing IBM management to develop the 360 mainframe computer. He retired in 1973.

LEON LEWIS, 81, (10-27-96) radio personality. He was the host of the all-night program, The Leon Lewis Show, on WMCA(AM) New York from 1970 to 1980. Earlier he was Director, News and Public Affairs at WLIB(AM) New York. He began his radio career at WABY(AM) in Albany, NY.

BOB MAGNESS, 72, (11-15-96) cable TV pioneer. He built a home-based cable television company in Memphis, Texas into Tele-Communications Inc. (TCI) the largest cable provider in the nation. In 1968 he moved to Denver and merged Community Television Inc. and Western Microwave Inc. to form TCI.

HARRY M. NEBEN, W9QB, ex-W9YVX, (3-29-96) electrical engineer. During WWII he served in the US Army Signal Corps and helped establish radio stations throughout Europe. After the war he was employed by Tucker Motor Cars, Amphenol Corp. and Sunbeam Corp. He pioneered several single sideband developments, designed test equipment and antennas.

NATHAN SAFIR, 83, (9-7-96) broadcaster. He founded KCOR(AM) San Antonio, TX, the first full-time Spanish-language radio station in the U.S. He also helped develop companion TV station KCOR(TV) (now KWEX) San Antonio. In the 1940s he began his broadcasting career by producing a weekly Spanish program on KTSA(AM).

PAUL WESTON, 84, (9-20-96) conductor, arranger and composer. During his 50-year career he worked with such stars as Rudy Vallee, Bing Crosby, Dean Martin, Bob Hope, Doris Day, Frank Sinatra, Judy Garland, etc. His song credits include *Day By Day*, *I Should Care*, *Shrimp Boats*, etc. Weston also held management positions with Capitol Records and Columbia Records. Some of his TV musical director credits include *Laugh In*, *The Bob Newhart Show*, *Disney on Parade*, etc.

ALMA YODER, 103, (11-13-96) early broadcasting pioneer. Her voice was transmitted by the Amateur Radio Corps of America from an experimental station off New York harbor in 1917. By 1938 she was the emcee of one of the original radio talk shows, *Let's Talk It Over*, interviewing prominent women of the day. Later she presided over the first TV cooking show, In the Kelvinator Kitchen, which aired from May 1947 until June 1948.

••••

Information for this column was obtained from *Broadcasting and Cablecasting, The Hartford Courant, The New York Times, QCWA Journal* and *Variety*. Thanks to Don Andrus and Reuel D. Newton, Jr., WB7FEM, for additional source material.

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Orient, NY 11957

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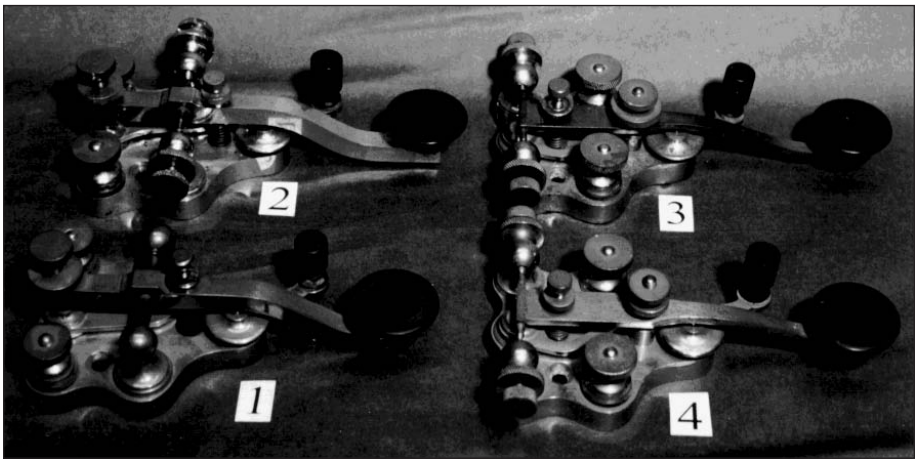
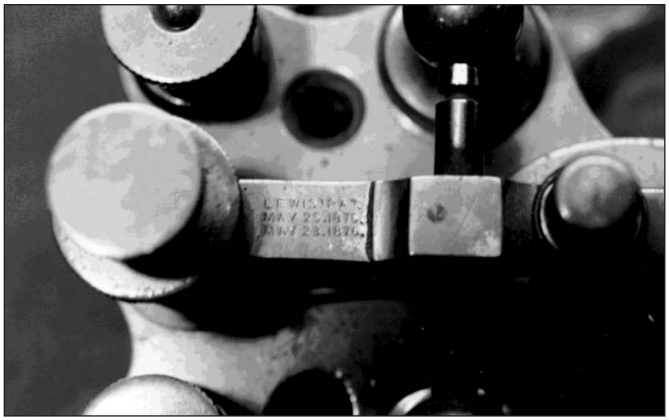
***KEY & TELEGRAPH**, continued from page 37*



Various Lewis key variations. See chart for key to numbers.

and those with "Western Electric Company" from 1882 or '83 to around 1885 or so. This helps a little in trying to figure out which Lewis keys were made when, but it appears that there may have been considerable overlap. The chart on the previous page tracks the Lewis key styles.

No biographical information about Lewis has been found by us. It seems likely that he worked for Western Electric, since both patents were assigned to the Company. As far as the functioning of the keys themselves, in our opinion they are unremarkable in either of the pivot arrangements. The lack of trunnion adjusting screws in the '76 model proved in fact to be a disadvantage which was remedied by consistent use of screws thereafter. In keeping with Western Electric practice, most all of the Lewis keys were originally nickel plated. Tasteful or not, Lewis' efforts are appreciated by collectors 120 years later.



Typical Lewis patent markings on key lever.

CLASSIFIED ADS

Old-time ads are free to members collecting and restoring equipment for personal use. Please observe the following: (1) one ad per issue per member; (2) include as SASE if acknowledgement is desired; (3) material must be more than 25 years old and related to electronic communications; (4) give your full name, address and zip code; (5) repeats require another notice (we are not organized to repeat automatically); (6) the AWA is not responsible for any transaction; (7) we retain the right to reduce an ad's size if over seven lines; (8) AWA does not accept commercial advertising in this column; and (9) the deadline for ads in the May issue is March 15, 1997. Ads received after that time will be held for the following issue. Mail all ads to:

Richard Ransley, P.O. Box 41, Sodus, NY 14551

SELL/TRADE — BC/SW TUBE RADIOS

Spartan 6 tube metal AM/SW, no back, $25; Crosley B637 2 volt battery car/portable set new in crumbling box, $100. obo. Shipping extra. Dave Dameron, 819 Boundary Place, Manhattan Beach, CA 90266-6621 (310) 318-5311

Table model Philips (Holland) radio. Pushbutton with AM/FM/SW. Cabinet needs paint, not tested. $12. Plus 10 lbs. Shipping. John Uscinowski, RR#1, Box 379, Greenwich, NY 12834-9519

SELL/TRADE — COMMUNICATIONS GEAR

National HRO 500 with LF10 Preselector, working, very good condition, asking $1200. for all. Also still looking for service info. (schematic) for Mc Murdo Silver Masterpiece V. Irvin Sanders, RR3, Box FA53, Harrisburg, PA 17112 (717) 469-2185

SELL/TRADE — GENERAL

Best offer for following: Philco console EC 40-200 with foldup lid. Needs plastic buttons/caps; Sparton Equasone 930 9 tube console with double doors, in excellent condition; Zenith 5F251 battery console, good cond.; Emerson portable AC/battery in leatherette, BC/SW bands, good cond. and works; Silvertone portable, leatherette, w/batteries and works. Also several old table battery wood case radios for parts. Ronald Hoose, Box 304, Haines Falls, NY 12436 (518) 589-0905

DuMont remote control unit RA-369, $10.; 1938 Sparton clock unit for "Selectime" radio, $20. Jerry Talbott, 1440SW 239th, Hillsboro, OR 97123

Hallicrafters TV, Model T-54, in blond cabinet. Clean, $150. John Ward, 140 Main St., Box 7, Bloomfield, NY 14443, (716) 657-4443

Kellogg Army Field Phone, $25.; Philco 38-7 (pickup only), $95.; Philco 38-89 (pickup only), $85.; Philco 48-482, $55.; Philco 53-958, $45.; Coronado B3, battery only, $45.; Windup portable 78 phonograph, $45.; Detrola 2742 radio/phono, needs cartridge, $75.; Majestic 300, $45.; Admiral 17" bakelite, $55. All radios work. Shipping extra. Robert Rossi, 10936 Melbourne St., Allen Park, MI 48101

Philco Model 37-640 cabinet with bezel and original electrodynamic speaker. Cabinet is nicely refinished with new varnish. Original veneer is tight. Best offer. Also have D-104 mike in superb condition. Has extension tube with heavy cast iron base, $60. Plus UPS. Ralph Zekkelman, 6485 Gross Road, Bloomington, IN 47401 (812) 333-8941

Selling some of my radios. Tell me make and model of what you are looking for. SASE for information. Clarence Swartz, 7415 Van Ness Rd., Baldwinsville, NY 13027

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Tube and transistor plastic portables and wood table radios. Clean and working. Send LSASE for list. Greg Sheppard, KA3DBG, 4402 Jupiter St., Rockville, MD 20853 (301) 946-6460

Victrola Credenza (self-supporting tone arm), $3000.; Rider Manuals Vols I-XII, $800.; Superior Model TV-11 tube tester, Westmore Model 501 tube tester, $150. each. Taking bids on new JAN-CRC-800, JAN-CWL-860, KT66, T24. Terms cash/carry. Ralph Weaver, 3014 Ferguson Valley Road, McVeytown, PA 17051

Old radio books 1917-1950, magazines, catalogues, receiving and transmitting tube manuals, Riders' indexes, early TV literature. Many old radios. Radiolas, Crosleys, Deforest, Cathedrals, Kadette Jr's, crystal sets, Radio Boys books, large list — SASE. Bill Rolf, 30131, Center Ridge, Westlake, OH 4415.

Federal 101 BC Band RCVR/FSM, w/ manual. R-748/TRC47 VHF-AM XTAL controlled RCVR w/schematic. TA-264/PT field phone. TS-183V battery tester. TU-51 (BC 610 TU) C1306/GRA14 control box. I-130 VHF signal genrator. TV-7 tube tester w/ manuals. Leitch meter matic VTVM Model 21-56, Jackson 643 VOM.

SELL/TRADE —LITERATURE

186 page softcover book "Tube Lore" by Ludwell Sibley, $12. Postpaid. Ken Greenberg, 4858 Lee, Skokie, IL 60077 (847) 679-8641

Antique Radio Gazette, Vol. 1, Numbers 1 thru 4, $5. each; Volumes 15 thru 21, Numbers 1 thru 4; Vol. 22, Numbers 1 and 2, $2. each. All plus parcel post. Daniel Gaidosz, 342 West River Road, Orange, CT 06477

Copies of operating manual for the "Lafayette" tube and transistor tester, EMC Model 215, $10. postpaid. Also have a terster as above with cipy of manual for $30. postpaid. William Mitch, 668 W. 725 South, Hebron, IN 46341 (219) 996-3313

Copies of old radio advertisements including Atwater Kent, Freed-Eisemann, Hallicrafters, Radiola, Thorola and Zenith. Also have plans for building crystal sets and 1, 2 and 3 tube radios. SASE for list Ernie Nagy, 1012 S. Collier, Unit 112, Marco Island, FL 33937 (941) 389-9101

Old magazines: The Wireless Age for May, June, July and Dec. 1916; Radio Broadcast for June, Nov., Dec. 1922 and Jan. Feb. 1924; Experimental Wireless (British) for Oct. 1923; Popular Radio for Dec. 1923. $5. Each plus shipping. Henry Mohr, W3NCX, 1005 W. Wyoming St., Allentown, PA 18103

Price reduction on book: "Illustrated History of Philips Radio Valves to 1935". Now $15. including sea mail or $20. Air mail. Order direct form Fin Stewart, 1 Perouse Ave., San Remo, N.S.W. 2262 Australia

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QST magazines 1916-1921. Send $2. for condition/price list. Richard Titus, W3CXJ, PO Box 1441, Voorhees, NJ 08043

Riders Radio manuals: Vol. 1, $95.; Vol. 2, $80.; Vol. 3, $70.; Vol. 4, $60.; Vol. 10, $15 and Vol. 15, $25. All plus shipping. Ricky Parrish, 1260 Marilyn Dr., Cape Girardeau, MO 63701 (573) 334-1726

Sams "CB" series manuals; Radiotron Designer's Handbooks 3rd & 4th edition; ham and test equipment manuals, Sams "TSM" and "TR" manuals; catalogs. Want manuals/schematics for RME (Globe) VHF-602; Sonar SR-9; Radio Shack 1954 catalog, B-A 1954 catalog; Radio News for June 1945; Riders Volume 22. Al Bernard, PO Box 690098, Orlando, FL 32869-0098 (407) 351-5536

Tube Lore, the new book introduced at Rochester. 186 pages of tube scoop for the serious user-collector, 8½" by 11" format. Covers design history, identification, date-coding, reactivation, and auction prices. Lots of data on special-purpose, military, and audio tubes. Special sections on sweep and WE types. $19.95 ppd in North America, $24.95 elsewhere. Ludwell Sibley, 44A E. Main St., Flemington, NJ 08822

Western Electric Catalog, 1919, hardbound in excellent condition, $75. Gary Cain, PO Box 521, Shakopee, MN 55379 (612) 496-3794

Want Sams AR Manuals, one ea. of vols 309, 310, 314-322, 324-340. Or will sell nearly complete set (312 total books) for $500 (firm). SAMS folders 23 thru 229 in 21 (Rider's like) binders $100 takes all. Back issues of Antique Radio Classified beginning thru Dec '96 $100 takes all. Jim Farago, 4017 42nd Ave. S., Mpls. MN 55406-3528, 612-7212-0708.

SELL/TRADE — PARTS

GE321 cabinet, excellent condition, wood, 1946, all original: label, grill, dial markings. Alex Purdy, 10717 N. Saratoga Dr., Hollywood, FL 33026-5002

National plug-in coils on XR-6 forms, made for a National AGS communications receiver (1930). Will fit SW3 sockets. Four sets (12 coils) marked 160, 80, 40 and one more set marked "D". Excellent condition - make offer. Russ Gundlach, 38 Clinton,

Westfield, NY 14787 (716) 326-2090

NOS power resistors for many old radios. $5. Each postpaid. SASE for list. H.E. Spaulding, 1567 Lilac Way, Upland, CA 91786

SELL/TRADE — TEST GEAR

Vintage wavemeter collection spanning 1918-1960. Over 20 instruments from General Radio, NESCO, National, Millen, Simpson, etc. Most pre-WWII. Sell collection or trade for quality communications gear. Send large SASE for list or email. Rick Ferranti, WA6NCX, 254 Florence Ave., Arlington, MA 02174-7248 email: REMLER@LL.mit.edu

SELL/TRADE—TRANSISTOR/CRYSTAL SETS

Hinode germanium radio, Model-6A, original box, instructions, ear piece, antenna lead c/w connectors, and original packing excelsior. Best of all it works. J. Keith Carter, VE3JKC, 709 Kitley 3, RR #2, Jasper, Ontario K0G 1G0 (613) 275-2415

SELL/TRADE — TUBES & TRANSISTORS

Over 500 antique radio tubes. Balloon and ST shape. Reasonably priced. 3 Edison battery oil bottles. $8. each. SASE for list. Herman Fothe, 5292 Tiffany Ann Cir., West Palm Beach, FL 33417 (561) 688-2794

Tubes - inexpensive. Send SASE for list. Don Gagne, W2LID, 626 Holly Hill Dr., Brielle, NJ 08730 (908) 528-5296 after 8 PM

WANTED — COMMUNICATIONS GEAR

Harvey-Wells R9-/R9A, T90, ASP90 PS, Ten-Tec Model 315, Mosley CM-1, RME 50/50A, RCA AR88D, Mc Murdo-Silver 801/801B w/coils. State price and condition. Herman Schnur, Route 3, Box 151, Greenville, NC 27858 (919) 752-2264

National 7180AB dog house power supply, SW-3 #31, #35 and #33A coils, and NC1-10 D1/D2 coils. Will trade money and/or SW-3 #37 coils and National manuals. Hank Bredehorst, 2440 Adrian St., Newbury Park, CA 91320 (805) 498-8907 or Quailhill@aol.com

Want National HRO-60 with coils. Must be in excellent condition and of showroom qualaity. Carlos Vial, CE3FCF, Box 19051, Santiago, Chile

Working or not: Hallicrafters HT-18 or HT-19, SP-44, SM-40; also HF/VHF/UHF converters (14 Mc. & up) of any mfg. or type. Brian Shore, N9ALD, 3517 Libal St., Green Bay, WI 54301-1278

WANTED — GENERAL

2 tube amplifier for AK breadboard; #48 chassis for Crosley Elf; dial escutcheon for Philco 70; tube shield for Philco 70. Walt Wrabek, Rt 4, Box 370, Menahga, MN 56464

A German friend is looking for any examples of the Westrex or Tefi sound tape cassettes, technical & advertising literature and their players (vintage 1953-63). This is a nonmagnetic, endless loop cassette with the audio tracks emobssed into the tape and played by a needle pickup. Robert Lozier, 600 E. Green St., Monroe, NC 28112 (704) 283-2638

7 pin and a 9 pin tube socket extenders; a good grade signal generator for alignment use. Gerald Liccione, W2JPL, 118 Hiawatha Trail, Liverpool, NY 13088 (315) 457-7928

Am looking for tube broadcast/communication gear, like compressors, limiters, equalizers, consoles, tape recorders, microphones by Western Electric, Altec, RCA, Gates, Collins, GE, Teletronix, Pultec, Lang, UREI, UA, Langevin, etc. Also NOS tubes and broadcast books, magazines. Mike States, Box 81485, Fairbanks, AK99708 (907) 456-3419 ph/fax. Thanks!

Amplifier for Westinghouse Aeriola Sr. receiver. Harley Myler, 10151 University Blvd., Orlando, FL 32817 (407) 657-4680

Ann Arbor, Michigan related radios & paper items; Airite, Argus, Arion, Arborphone, Cavac, Courier, Ellsworth, Geneva, International, Kadette, Musette, Ottawa, Pastime, Peerless, Rotofor, St. Regis, Waltone, Weber & Zeta, for inclusion in: Nevins Museum of Radio. Ken Nevins, 406 Jipson St., Blissfield, MI 49228 (517) 486-3019 evenings please

Loop antenna and drive gear for a Radiola Super VIII; 1 tube cover cap, single hole, for Scott 16; hard cover copy of Alan Douglas' Volume 1 1920's Radios; dial glass for Philco 41-608; chassis for Philco 42-430; RCA/Westinghouse DA unit, or complete chassis w/faceplate. Mark Rauber, PO Box 1077, Minden, NV 89423 (702) 782-3596

Model LF-90 converter by RME; large 7 pin tube sockets for 1625 tubes; CW23097 control box for GF-11-12 transmitters; Tech. Manuals for GF-11-12; Riders Vol. 12. Wayne Letourneau, WB0CTE, Box 62, Wannaska, MN 56761 (218) 425-7826

Pansasonic TR-005 TV. Jerry Talbott, 1440 SW

239th, Hillsboro, OR 97123

RCA 77D or 44BX microphones and RCA 15" LC-1A or other model speakers made by RCA. Larry Drago, 383 Lincoln Dr., Cheshire, CT 06410 (203) 272-6030 or fax (203) 272-2002

Vacuum Tube Fisher tuners, power amps, and pre-amps. Advertising literature, parts units, oddball items, TFM-1000 or FMR-2 solid state tuners. USA collector for 20 years. Trades possible. Have vintage Fisher tube & early solid state parts and manual copies available. Al Pugliese, The Fisher Doctor, 27 Daleham St., Staten Island, NY 10308 (718) 948-7489 eves 8 - midnight, weekends anytime

Volume knob for Hallicrafters SX-96; speaker for Hallicrafters R-48; Hallicrafters SX-100 and National TV7 television. Ron Zammit, 469 Campana Place, Arroyo Grande, CA 93420 (805) 489-5724

Want to borrow a copy of an American De Forest Wireless Telegraph Co. stock certificate. Needed for radio newsletter article. Will credit you and pay for repro & postage. Wayne Gilbert, 10751 Routt St., Broomfield, CO 80021 (303) 465-0883 email wagil@aol.com

Am gathering material for an article on military entertainment radios, both US and foreign. Need any info on their use, photographs, manuals, etc. Also looking to buy any of these sets for my collection, particularly Templeton BP-2-A5, Jetronics R-853/URR, and Zenith R-520. I'll reimburse you for copying/mailing costs on printed information. Henry Engstrom, PO Box 5846, Santa Rosa, CA 95402 (707) 544-5179

Harvey-Wells APS-90 p.s. & manual. EV420 desk stand. Manuals wanted for: Karadio mod 80 & ps, Harvey-Wells TS-90 Xmtr, Geloso G-207DR receiver and G212TR transmitter, Navy RAX receivers (original only) Mel Stoller, K2AOQ, 100 Stockton Lane, Rochester, NY 14625, 716-671-0776.

WANTED — INFORMATION

Board layout for Swan SS-200. I have the schematic. Harry Mills, K4HU, 631 4th Ave., W., Hendersonville, NC 28739 (704) 693-7519

Info on Circle X antennas for TV reception; and the Circle X Antenna Corp. from the 1950s -1960s; Also info. On TV transmitting antennas from the late 1930's to present; Books/magazines on history of TV. Gene Sky, 1570 W. Maggio Way, Apt. 1077, Chandler, AZ 85224 (602) 732-9337

Instructions, schematic diagram and tube set-up chart for EMC (Electronics Measurements Corp., NYC, NY) Model 208 tube tester. Doug Fox, 603 S. 12th Ave., St. Charles, IL 60174 (630) 584-5915

Philco News company newsletters wanted by historian to assemble into a complete set. Any leads appreciated. John Okolowicz, 624 Cedar Hill Rd. Ambler, PA 19002 (215) 542-1597 e-mail 70313.2564@compuserve.com.

Want a history of your amateur call? Name and address of each prior holder since 1912 for $20. Box Arrowsmith, K4JN, Box 166, Annandale, VA 22002 (703) 560-7161

WANTED — KEYS AND TELEGRAPH

I'm looking for additional bugs (speed keys) for my extensive collection. Early and unusual examples are most welcome as are oddball configurations such as lefthanders, uprights, "Vailograph types," right angles, etc. I have some neat traders and/or will buy one or complete collections. Gil Schlehman, K9WDY, 335 Indianapolis Ave., Downers Grove, IL 60515 (630) 968-2320

WANTED — LITERATURE

Manual and schematic for Heathkit Model MP-14 (1969) 12 volt, adjustable voltage/frequency inverter. Jim Farago, 4017 42nd Ave. So., Minneapolis, MN 55406-3528

Manuals for Eico 232 construction; Eico 666, 667 construction and operation; tube chart books; operation and repair info for TV3/BU, TV7/BU, BC221, Simpson 260. Alan Mark, PO Box 372, Pembroke, MA 02359

Manuals or copies for the Simpson Model 383A Capacohmeter, and N.R.I. Model 33 Signal Tracer. Richard LaMark, N2TXL, 6822 Tuckahoe Rd., Williamson, NY 14589-9589 (315) 589-2552

Radio Boys Books, with dust jackets, by Chapman, especially "On Signal Island," "Aiding the Snow Bound" and "To the Rescue." I have some extras to trade. Henry O'Meara, WB2NRX, 42 Aqua Ra Drive, Jensen Beach, FL 34957 (561) 229-2307

Specific pre-1930 single issues/complete years of "QST" magazine, to complete my personal collection. Eddy Swynar, VE3CUI, 3773 Concession Road 3, RR #8, Newcastle, Ontario L1B 1L9 Canada

Stamps by Ekko Co., Chicago, 1924, showing call letters of radio stations, depicting eagle, beaver in red. Reg Powell, Holyrood, Ontario, Canada N0G 2B0

WANTED — MILITARY

Looking for military entertainment radios for my collection, including Templetone BP2-A5, Jetronics R-853/URR, Zenith R-520/URR or R-520-A. Also need manuals/schematics for any entertainment radio. Henry Engstrom, KD6KWH, PO Box 5846, Santa Rosa, CA 95402 (707) 544-5179

Please help me restore a rare Zenith Transoceanic R-520A/URR. Need the military identification plate that is located below the case front latch. Also need whip antenna, two knobs and slide rule plastic front panel from any 600 series Transoceanic. Will buy pieces or a whole parts radio. Thanks. Jack Gelfand, K2BMI, 44 Harbourton-Woodsville Rd., Pennington, NJ 08534 (609) 258-2930 email: jjg@princeton,edu

WANTED — PARTS

1920s radio parts in original boxes, unusual antique tubes and tube boxes. (For display) Larry Daniel, 706 Pearson Rd., Wright-Patterson AFB, OH 45433 (937) 754-1567

Battery holder for a Realistic HTX202 2 meter FM Transceiver. Want one for the Alkaline Batteries. Tad Drogoski, 507 Coal Valley Road, Jefferson Boro, PA 15025 3705 (412) 466-5950

Hammarlund Low-Loss coil sets. Need set of 4 prong plug-in coils #SWK-4 kit of 4 coils 17 to 270 meters. Also need set of 6 prong plug-in coils #SWK-6, kit of 6 coils. Top price paid in fine condition. Jack Steinholz, 107789 Fairmont Village Dr., Lake Worth, FL 33467 (561) 641-1507

Looking for Stewart Warner Model R149X console radio chassis and cabinet. Also looking for a schematic for a GE radio Model C-2570A. James Maloney, 1703 Leno Rd., Macedon, NY 14502

Original knobs for Emerson 636A table radio (Bunis v.3, page 75). Also, original paperboard back for Firestone R-320 1939 World's Fair radio (Evollution of the Radio v.1, page 139). John Pelham, W1JA, 1185 Bend Creedk Trail, Suwanee, GA 30174 (770) 476-0473 email: John_Pelham@msn.com.

Radiola IV horn; Radiola II cabinet; cabinets for Scott Super 12, Radiola Super VIII, Music Master 50; Dud tipped WD11's; DeForest, AK, Western Electric and Radiola items. Steve Wallace, 3707 Pricetown Rd., Fleetwood, PA 19522 (610) 944-7230 email kkks@epix.net

Rosette 1¼" knobs for SW-3/SW-5 receiver restoration. Also need thumb-wheel dial for SW-3 gain control. H. P. Bohlander, W3VVS, 2731 Hawthorne Road, Glenside, PA 19038-2406 (215) 886-8666

Speaker cloth for Philips radios of the 1935 era with stars motif. Will send samples and quote. Necolo Rubini, Via Mazzini 7, 35040 Masi PD, Italy tel/fax 0039 425 52150

Three edge wheel operated rheostats to complete Grebe CR-9 restoration. These are the same as the half-moon shaped used in the Syncrophase. Ross Smith, 1133 Strong Ave., Elkhart, IN 46514 (219) 295-7770

Tuning head for Jennings UCS-300 vacuum variable capacitor. If you have a defunct UCS type VVC, I can use its head! Cash or swap from my long list. George Goldstone, W8AP, 1010 Burnham, Bloomfield Hills, MI 48304

Want AK82 repairable chassis and clean Firestone "Newscaster." Motivated buyer and quick pay. Thanks. Robert McEntire, 119 Saint Marks, Sugarland TX, 77478 (281) 242-5878 before 9 P.M. CST

"S" Meter for 1940s HRO (or cheap RX); black wrinkle table speaker for RAS or HRO; ID plates for entire 1944 National RAS Receiver and accessories. Thanks. Greg Greenwood, PO Box 1325, Weaverville, CA 96093 or VM message WK# (707) 523-9122

WANTED — BC/SW TUBE RADIOS

Plastic tube radios from 1950s and 1960s. Alex Purdy, 10717 N. Saratoga Dr., Hollywood, FL 33026-5002

Restorable Zenith chairside radios, Models 6S238, 6S249, 6S341 and 10S452. Any condition considered. James Fisher, 344 Harrison Ave., Manville, NJ 08835 (908) 725-7476

Zenith Model 8-S-563 (1941 floor model). Condition not important. David Ivarson, 5 Church Rd., Collegeville, PA 19426

To complete my radio collection: one complete or partial catalin plastic radio, in any condition. Louis K. Yadevia, 601 Church Lane, Upper Darby, PA 19082. 610-622-2573.

WANTED — TRANSISTOR/CRYSTAL SETS

Crystal set. Have always wanted one. Tell me what you have or would recommend. Thanks. Greg Greenwood, PO Box 1325, Weaverville, CA 96093

or VM message WK# (707) 523-9122

Philmore Crystal Set. The one with a small glass dome over the crystal and cat's whisker. Has slanted fromt where tuning lever is located. Black preferred. William Mitch, 668 W. 725 South, Hebron, IN 46341 (219) 996-3313

WANTED — TUBES & TRANSISTORS

468, 285, WL469, 822, 211, VT4C, 311, 835, 203A, etc. or equilavent substitution types. Harry Goldman, Lane # 3 AMY, Queensbury, NY 12804

4CS100L EIMAC conduction-cooled PA tube. Dave Ross, 31 Seal River Road, Rosburg, WA 98643 (360) 465-2117

WE215A peanut tubes working or duds OK. (Navy base - 4 flat contacts like panel light bulbs). Call Bruce Russell collect at home (604) 299-1116 or at work (604) 298-1038 or packet VE7HII @ VE7ROB Shipping address is Blaine, WA

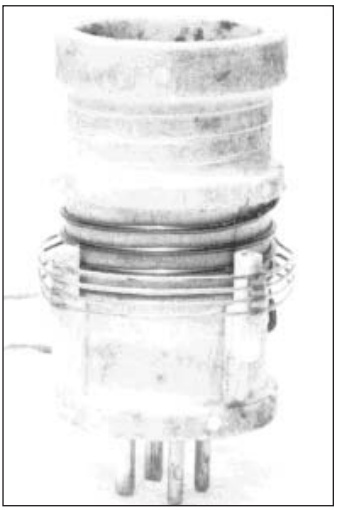
HALLICRAFTERS, *continued from page 44*

Cabinet preparation and painting absorbed the most time. During this task I found a simple way of giving the interior components a professional paint job without major rewiring. Those who face this problem might consider the following approach.

All mounting hardware of the transformers, chokes, etc., was removed and replaced with longer temporary bolts that permitted a ¼" nut to be inserted between the component and the chassis. This elevation was achieved without disconnecting any wires. Now I had enough room to mask off the chassis while painting components and vice-versa. Stencilled identifications on the chassis were masked using press-on stickers obtained at a stationery store.

I found an artist's-type air brush to be indispensable for doing close inside work. With the painting completed, the original hardware was replaced, resulting in a factory-new appearance.

After a final "buzz-out" of the units, it was time to address the final-coil problem. Ads were placed in the leading antique radio magazines, with the first response obtained from Barry Wiseman of Electric Radio. Barry was about to restore an HT-6 also (although admitting that his time was pressed in other directions and he hadn't started yet). However, he had a few duplicate coils and graciously sent them. Thus I was assured that the HT-6 could be put on at least one of my favorite bands.



One of the author's home-brew final coils.

The Hallicrafters part number for these units was 51-6XX. If you have a strange coil in your junkbox with this number series, you can now tag it "HT-6" and take it to the next hamfest. I know it will be snapped up.

The responses to the ads I placed confirmed that the amateur fraternity is always ready to lend a hand. Sam Thompson spent many an hour drawing detailed sketches of his HT-6 coils while Joel, WB2BMH, did likewise on the coils he had on hand. A W3 amateur sent copies of the original Hallicrafters drawings and parts list for constructing both oscillator and final coils. I am sorry for misplacing his name and call, but he has a from-the-heart "thank you!"

The four-prong ceramic 1½" forms I needed to build the missing coils were unavailable as such. But, tapping the junkbox, I found some old four-prong polystyrene coil forms along with some 1½" ceramic forms from a WW II family of transmitters. With a little fitting and epoxy, I mated the bases of the polystyrene forms to the ceramic forms and was able to develop coils for all bands. The HT-6 was once again ready for air time!

Nowadays when I sit at the operator position with the HT-6 on the air, it creates a memory flashback to those days of yesteryear when a young kid of 15 was thrilled by this transmitter. My thanks to all who have helped to create that thrill!

***TRANSISTOR**, continued from page 17*

filed by J. Torkel Walmark on February 28, 1957 and granted August 18 as U.S. Patent No. 2,900,531.

The development of solid state technology began with Braun observing the unilateral conductance of certain combinations of certain metallic substances in 1874, and the investigations by Pickard and Dunwoody in the U.S.A., and others abroad.

In this period, some individuals certainly harbored the suspicion that some of these materials possessed capabilities yet to be explored. Dr. W.H. Eccles in 1910 demonstrated that oscillation could be produced by a crystal device suitably arranged and this was corroborated by Pickard and others. In 1915 Pickard demonstrated the use of an oscillating crystal circuit for heterodyning continuous wave signals to provide tone output to telephone receivers. He also developed the oscillating crystal as an autodyne CW receiver. Last, but not least, was the revival of this technology by Dr. Esaki as the "tunnel diode", and later, by others, as "hot diode" technology.

But two element solid state technology had never produced an amplifier (i.e., an energy gain device). It remained for Bell scientists, building on the work of Lilienfeld and others done decades before, to develop the first practical amplifying semiconducor device, the "transistor."

***AMATEUR RADIO**, continued from page 31*

From Greenwich, W1BCG logged over 800 contacts, including QSO'S with stations in England, Canada, and the Caribbean. Many of the overseas stations that heard W1BCG could not get through because of power limits and antenna restrictions in Europe. Therefore, W1BCG is acknowledging with SWL cards from these stations. The special event stations on the other bands logged over 1300 contacts.

Of the special messages received at the Greenwich site, one stands out as follows:

W1BCG de W2RCA. Don have msg for you. All ready to copy?

Copy to W1BCG AWA AWA congratulations to all at AWA AWA for this most important anniversary of the Radio Club of America 1BCG transatlantic message and commemorating this you are the first contact made by our club's new station license W2RCA.

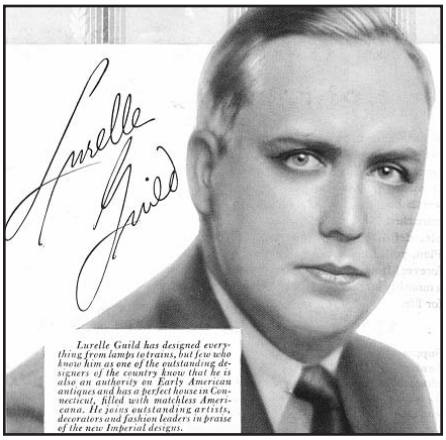
73 Frank Gunther
Trustee, Radio Club of
America, W2RCA

Some other items of special interest include:

- First station contacted by W1BCG on December 9, Bud Hall (K2LP). (That's 2 for 2, Bud)
- Contact with K1BCG (note the K), Dave Higgins, Seaville, New Jersey.
- Several confirmations from England by telephone and "e" mail, a unique combination of "old" tech and "new" tech.
- Participation in the 95th anniversary of Marconi's initial transmission from Poldhu, England (GB2GM) to St. John's Newfoundland (VO1AA), contacts also confirmed by "e" mail.

In addition to articles in QST and OTB and special event announcements in other magazines, this special event received much local publicity in the press and even television. The coordinator for all the activities was Tim Walker, member of the Norwalk club and AWA.

Mike Raide, W2ZE, test-operates W1BCG as Event Coordinator Tom Walker, N2GIG, looks on.


Lurelle Guild
Lurelle Guild has designed everything from lamps to trains, but few who know him as one of the outstanding designers of the country know that he is also an authority on Early American antiques and has a perfect house in Connecticut, filled with matchless Americana. He joins outstanding artists, decorators and fashion leaders in praise of the new Imperial designs.

The designer's portrait peers out from a wallpaper testimonial he wrote in 1936. Accompanying copy gushes that he "has designed everything from lamps to trains."

made deeper (front to back) to accommodate the big chassis typical of the model 511, Kent's deluxe console of 1935. This chassis could have been easily upgraded to complete with the Zenith Stratosphere and other super-deluxe sets.

Changes to the compact line would probably have been restricted to new styling, since the electrical designs had become standard. New styling was sorely needed; the effect of the depression was plain to see in a dreary sameness of style throughout the line. Cabinets were being reused from model to model with only minor variations in trim or dial escutcheons. Lurelle Guild could have made a major contribution here. But, regretfully, we'll never know what the impact of his work would have been.

BIBLIOGRAPHY

Conran Directory of Design, p. 146
Dictionary of 20th Century Design, John Pile, p. 108
American Design Ethic, Arthur Pulos, pp. 287-88
Fortune, February 1934 (pix)
Modern Plastics, March 1935, p.l2, "From Old to New With Lurelle Guild"
Forbes, 11/15/1936, p. 36, "Durable Goods Go to Town"
Art and Industry , "Designer for Mass Production," June 1938
Industrial Design, October, 1960, p. 69 "Design in New York"
Darien CT newspaper 11/15/73
The Geography of American Antiques, Guild, Doubleday, 1927

***HEADSETS**, continued from page 21*

American Electric Army & Navy Type 3.2k
Ben Wolfe Radio Electronics Corp. Ambassador 2k
0. Brunet Paris 4k ball joints
Charles E. Chapin Co. Inc. N.Y. N.Y. 2k, 3k
Electric Industries, N.Y. ULTRA 2.2k
Little Tattler - add 3 variants
Monarch Tel. Mfg. Co. Fort Dodge, Iowa 160 ohm
No Name 2k dual, terminal block on rear of rcvrs - mfg'd by Wireless Cable Tester Co.
SRACO Loud Talker lk single Standard Radio Corp. Chicago
Victor Telephone Works Chicago 1.6k dual all alum.
Webster Electric Co. Type 1A 2.5k dual

During the past few years, many foreign crystal sets have been turning up at sales and auctions in the U.S.A. Here are some headsets advertised in an early Brown Brothers Limited (Great Eastern St. London) catalog:

Brandes
BTH 4k
S.G. Brown
Type A 120, 4k, 8k
Type D 120, 4k
Type F 120, 4k
Adjustable 2k, 4k
Claritone
Clear-Speaker 4k
Ericsson 4k
Fellows 4k
Gecophone 2k, 4k
General Radiophone 2k
Siemens 4k
Sparta 4k
Stellaphone adjustable and non adjustable
Sterling Super Quality 120, 2k, 4k
Sterling Light Weight 120, 2k, 4k
Sterling Lilliput 4k
Sterling Ladies Handphone (lorgnette)
TMC 4k
Wembley
Western Electric 140 ohm and 4k

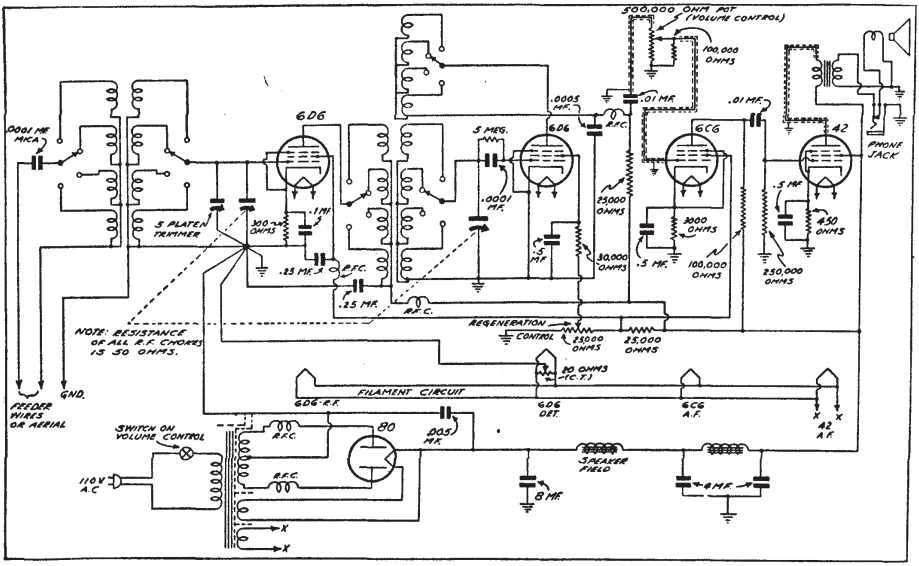
As usual, I welcome any and all correspondence regarding headsets. Note my new address at the top of this column.

feature is the unique name plate, riveted to the panel, combining the hallicrafters (*already in the familiar uncapitalized style — Ed.*) and the Silver-Marshall names, along with the logo and the statement "handcraft makes perfect."

The Hallicrafters S-1 receiver is quite rare, but since the writer knows of three, there are undoubtedly more around. Keep your eyes open at the flea markets and in antique shops; as they do show up! Price? Whatever it is worth to the seller...and to the buyer.

REFERENCES:

Short Wave Radio, July, 1934.
The Hallicrafters Story by Max de Henseler, 1991. Obtainable from the Antique Wireless Association Treasurer. Write for details.



Circuit diagram of the Sky-Rider S-1.

***LOOMIS**, continued from page 29*

supposed use of a demodulator or detecting device of some kind in his system. He does refer in his notes to a galvanometer, but his patent is silent on this point! Therefore, a reader of his patent, one "skilled in the art of land telegraphy," might guess that he simply placed a telegraph sounder in his aerial-to-ground circuit. After all, the title of his patent is "Improvement in Telegraphing." But if, as some Loomis fans urge, he used a very special galvanometer to detect electromagnetic radiation, one finds no support whatsoever for such conclusion in the patent specification or in the claim; and the patent contains no drawing.

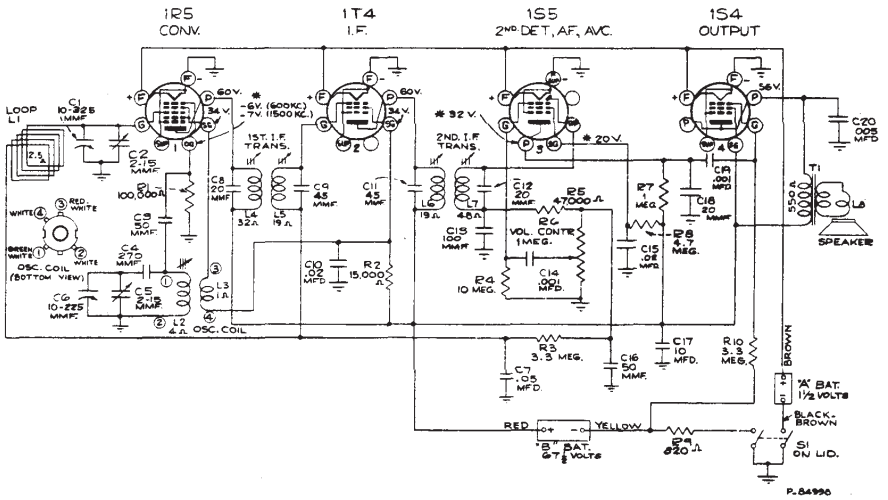
It is significant that under the Patent Laws of the United States, "The specification shall contain a written description of the invention, and the manner and process of making and using it, in such clear, concise, and exact terms as to enable any person skilled in the art to which it pertains ... to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention." The Loomis patent specification flunks this most basic and most elementary requirement of the Patent Law. Nor does the single claim of the Loomis patent call for any sort of galvanometer or other detecting element. Remember, the seventeen year patent monopoly is granted by the United States in return for the inventor making such a complete disclosure of his invention that one reading the patent would be enabled to practice that invention.

Accordingly, if that patent had ever been asserted against an alleged infringer it would surely have been found invalid.

Subsequent to our preparation of this analysis of the Appleby book and the Loomis patent, we were made aware of the recent investigations of B. L. Corum and J. F. Corum, PhD who presented the results of their work before a 1992 meeting of the International Tesla Society. It is understood that details, including a VCR tape, are available from The International Tesla Society, PO Box 5636, Colorado Springs, CO 80931 (Tel. 719-475-0918). The Corums report that in their replication of Dr. Loomis's system they used a form of galvanometer that served as a detector, and that their version of the Loomis receiver could indeed reproduce audio signals, including voice and music.

Unfortunately, due to the press of other matters, this writer has not availed himself of the Tesla Society information. As our college professors liked to say, such investigation is best left as an exercise for the student.

MEET THE COLLECTORS, *continued from page 45*



Circuit is a conventional superheterodyne using 1.4-volt miniature tubes.

iron core brought in some weak broadcast-band signals. But the input gang of the tuning condenser wouldn't peak and placing my hand on the loop produced a loud hum.

An ohmmeter check of the loop revealed that it was open, a condition that disappeared after I corrected a cold solder joint. And the malfunction in the speaker circuit turned out to have been caused by yet another poorly-soldered joint. With these problems solved, all it took was a little tweaking of the trimmers to bring back the radio to new and vigorous life.

VACUUM TUBE, *continued from page 25*

Moorhead

Elements of Radio Telegraphy, Ballard, p. 73 (type E.R. with Shaw base)

Elements of Radio Telegraphy, Stone, p. 252 (spherical bulb with European base); p. 253 (tubular E.R.)

Principles Underlying Radio Communication, p. 470

Radio Telephony for Amateurs, Ballantine, pp. 230-231 (SE-1444)

Everyman's Guide to Radio, pp. 175-176, 186-189 (type E.R.)

Myers Audion

Radio Telephony for Amateurs, Ballantine, pp. 230-231

Raytheon

Radio Guide Magazine, Sept., 1926 (BH rectifier tube)

Tube Pictures

Vintage Radio, McMahon, pp. 55-57, 171-189 (over 150 pictures of early vacuum tubes)

(continued)

Weagant Valve

Vacuum Tubes in Wireless Communication, Bucher, pp. 161, 167 (receiving types); p. 177 (transmitting types)

Western Electric

Radio Telephony for Amateurs, Ballantine, pp. 108-109 (type E/VT-2); pp. 230-231 (type D and type J/VT-1)

Vacuum Tubes in Wireless Communication, Bucher, p. 127 (early type D with cast brass base)

Wireless Valve Transmitters, James, pp. 192-193 (characteristics of type E)

Principles Underlying Radio Communication, p. 231 and p. 470 (VT-1, VT-2, VT-3, 215-A)

Invention and Innovation in the Radio Industry, MacLaurin, p. 74 (photo of 1915 Arlington Station used in long distance tests, S and W types are used)

Thermionic Vacuum Tubes, Van Der Bijl, p. 245 (photo of type W)

Westinghouse

Radio Telephony for Amateurs, Ballantine, pp. 230-231 (Aeriotron WD-11)

As new reference books come to our attention we will list them in this column. Recommendations from our readers will be greatly appreciated. There is a scarcity of foreign reference books written in English. Perhaps our overseas AWA members can help with this problem. — BPD

SILENT KEYS

Walter J. Burke, W9JCW
Paul Giganti, W6GVY
Richard Harrison, K2PUD
Kenneth Lum-King, ex K6BAZ
James E. McKim
Fenton W. Nash, WB2EXE
Glen Rogers
Lloyd Sherman, W3CDY
C. Friend Stafford
Herbert C. Waterman

Paul Giganti, W6GVY

Paul developed an interest in historical radio shortly after World War II and was one of the first to join AWA. He was a knowledgeable collector of early radio and photographic equipment and highly respected by fellow hobbyists.—Bruce Kelley.

Kenneth Lum-King, ex K6BAZ

Word has just been received that AWA member Kenneth Lum-King, one of the early Pacific island CW operators, died in August of 1995. Mr. Lum-King was the subject of a feature article in the May, 1989 issue of the *OTB*, which described his work for Uncle Sam as a radio operator on Howland Island with the Coman Oceanographic Expedition in 1935. In 1995 he donated an unusual 30s-style regenerative receiver to the AWA. Restored to working condition, it now occupies a prominent spot in the AWA Museum. The description of the receiver and the restoration process can be found in the August, 1995 *OTB*. His story, that of a 1930s depression era teen-age radio operator in the vast Pacific, living under adverse conditions for extended periods of time, makes for interesting reading, and readers are invited to check the August 1995 *OTB* for the references.—Bill Fizette

Awa Electronic Communication Museum

FREE ADMISSION

Location: Village Green, Rts. 5 & 20, Bloomfield, NY

Hours: May 1 through Oct. 31—Sunday 2-5 p.m.; also, June 1 through Aug. 31, Saturday, 2-4 p.m. and Wednesday, 7-9 p.m. (Closed holidays.)

Group Tours: By appointment.

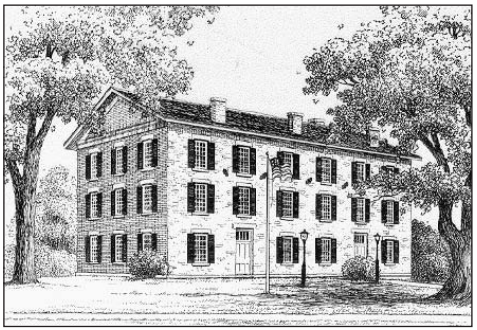
Museum Telephone: (716) 657-6260

Amateur Station: W2AN

Mailing Address: Bruce Kelley, Curator, 59 Main St., Bloomfield, NY 14469

THE MUSEUM

Visit our Internet web site: http://www.ggw.org/freenet/a/awa/



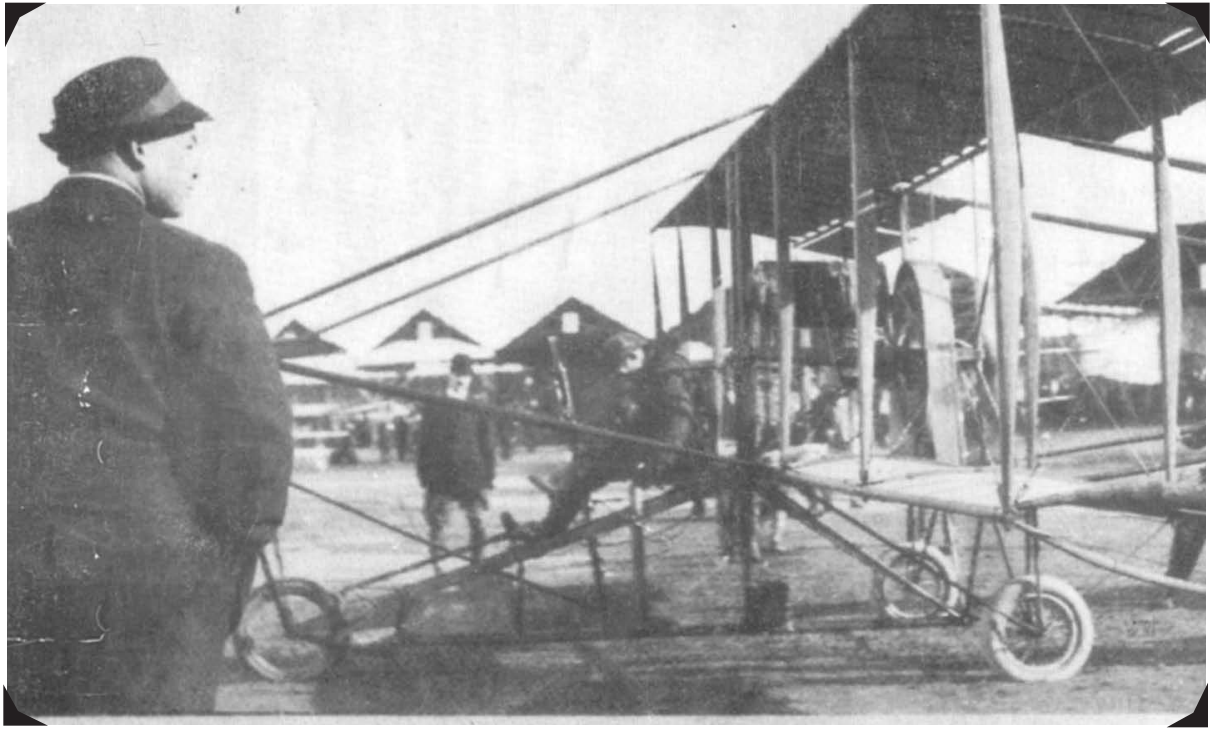
The Museum Committee expresses grateful thanks to members who have generously donated money and/or material to the AWA Museum. Your contributions make possible our continued expansion. On your next visit to Bloomfield, plan to tour the Museum Annex with its six new display areas as well as the already established military, amateur, vacuum tube and key rooms. And remember, we are always seeking new exhibit material as well as donations which can be auctioned at AWA events. All gifts are tax deductible.

AWA members represent more than thirty countries, and we've learned that many of our foreign members maintain small private museums to show their collections. A recent letter from amateur UA2AD, in Kaliningrad, Russia, describes his exhibit of military communication equipment. Here in the United States, we have Brother Patrick Dowd's outstanding tube exhibit housed at Manhattan College. Rated by some as the world's largest documented collection, it is well-arranged in cabinets and identified as to number and manufacturer. (To see it, write to Brother Patrick Dowd, F.S.C., W2GK, 4415 Post Rd., The Bronx, NY 10741-3499. Few large public museums—ones open to the public at regular, advertised hours—have radio exhibits; the Ford Museum at Dearborn, MI and the Smithsonian are well-known exceptions. A public museum devoted entirely to radio is the fine Pavek Museum in Minneapolis—BK, W2ICE.

Key collectors Fred Linn, W9NZF (left), and Murray Willer, VE3FRX, examine a rare Marconi key in the key room at the Museum Annex.

MUSEUM BENEFACTORS

Paul Bohlander, W3VVS
Bill Booker, W4WZU
Ed Clark
Bill Coffey, W2PX
Harvey Cohen, KB2LB
Mamoru Fujimuro, JA1FC
Bill Koutenis, WB2CII
Jack Morse, K2KFN
Nolan Stephany, N2EAW
Ed Taylor



MYSTERY PHOTO

Phil Weingarten, who brought us the November Mystery Photo, returns to our back cover with this remarkable image. We left the note in the border to give you a hint.

Do you have an interesting and enigmatic photo from any period of radio history? **The OTB** ***would like to consider it for publication on this page. Send your photo, along with the story behind it to Marc Ellis, Editor*** **OTB,** ***PO Box 1306, Evanston, IL 60204-1306. All photos will be returned.*** ***The answer to the November Mystery Photo is on p. 51.***